Future Counterland Operations: Common Lessons from Three Conflicts

A Monograph
by
Major William D. Dries, Jr.
US Air Force

School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas
AY 02-03

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

Major William D. Dries, Jr.

Title of Monograph: Future Counterland Operations: Common Lessons from Three Conflicts.

Approved by:

_____	Monograph Director
James Cody, Lt Col, USAF	
_____	Professor and Director Academic Affairs, School of Advanced Military Studies
Robert H. Berlin, Ph.D.	
_____	Director, Graduate Degree Program
Philip J. Brookes, Ph.D.	

Abstract

"Future Counterland Operations: Common Lessons from Three Conflicts." By Major William D. Dries, Jr, USAF, 59 pages.

Through the study of past military experiences, especially the examination of common lessons from differing conflicts, implications for future warfare can be revealed. Common counterland lessons from three major US conflicts are the focus of this study. Specifically, this monograph seeks the common lessons from the counterland experiences from the Persian Gulf War, the air campaign against Serbia, and the war in Afghanistan against the Taliban and Al Qaida.

To reveal these lessons, this study analyzes the counterland campaigns from three operations – Desert Storm, Allied Force, and Enduring Freedom – by laying out the counterland thinking behind the initial planning and how counterland evolved and developed during each conflict. Then the effects of counterland operations for each operation, both physical and psychological, are evaluated and compared. From this analysis, four significant common lessons emerge – these are described and assessed. These lessons, considered in aggregate, form the output of this study, with specific implications and recommendations for both future counterland and future joint warfare.

This study determines that three general lessons emerge from the counterland experiences since the Cold War: the value of intelligence, surveillance, and reconnaissance; the power of innovation; and the dominance of air power over surface forces. The three conflicts in question also reveal the limitations of counterland and how these limitations should be overcome. These lessons suggest a new balance of land and air power when facing opposing land forces. This new balance of power, first seen in Desert Storm and recently validated in Enduring Freedom, reveals a new way of thinking about land warfare and has direct consequences for joint planning, training, and doctrine. For the best results in future war, planners and leaders need to fully exploit the potential of air power in a counterland role. This is only possible with a fully joint form of land warfare.

TABLE OF CONTENTS

CHAPTER ONE

LAND WARFARE IN THE POST-COLD WAR WORLD

"We mustn't rely entirely upon yesterday's ideas to fight tomorrow's wars, after all, but I hope our airmen won't pay the price in combat again for what some of us have already purchased."[1]

General William W. Momyer, USAF

A Tale of Three Wars

Since the end of the Cold War, the United States (US) military has fought three significant conflicts – the Persian Gulf War, the air campaign against Serbia, and the war against the Taliban and Al-Qaida in Afghanistan. It is difficult to imagine three campaigns fought in more disparate operational environments. The Persian Gulf War was a very linear affair, fought in open desert with US and allied forces facing a "traditional" army; the air campaign against Serbia was fought using allied air power against the dispersed Serbian forces in mountainous and urban terrain; and the war in Afghanistan against the Taliban and Al-Qaida was fought mostly using a proxy army against a low tech enemy in rugged terrain. Despite these differences, the three campaigns share several commonalities, particularly in the employment of air power in the counterland role. The common counterland lessons from these three conflicts have significant implications for future land warfare.[2]

Under the newly released National Security Strategy of the United States of America, the President expects our nation to "continue to transform our military forces to ensure our ability to conduct rapid and precise operations to achieve decisive results."[3] In order to fulfill the President's vision, a transforming military must continually review past experiences to insure

---

[1] William W. Momyer, *Air Power in Three Wars (WWII, Korea, Vietnam)* (Department of the Air Force: 1978), v.
[2] "Counterland" is a United States Air Force (AF) doctrinal term encompassing the Close Air Support (CAS) and Interdiction (INT)missions. See Appendix A. This term is used rather than using "CAS and INT" for simplicity and consistency with AF doctrine. CAS or INT is used when specifically referred to.
[3] President, *The National Security Strategy of the United States of America* (September 2002), 16.

future success. This monograph examines experiences from Operation Desert Storm (ODS), Operation Allied Force (OAF), and Operation Enduring Freedom (OEF); outlines the development of counterland doctrine and execution; and identifies key common lessons. From these lessons, this work derives specific implications for future counterland operations and offers counterland-related recommendations for joint commanders and planners. As will be shown, the implications and recommendations affect joint and US Air Force (AF) doctrine, training, and joint planning. Future counterland requirements will require changes in procedures and counterland thinking. A scenario will help illustrate why this may be necessary.

A Scenario for Future Counterland

Problems with access into neighboring countries for military action against Iraq illustrate the possible requirements for a future counterland mission. Despite a potential lack of support from other nations, President George W. Bush stated in his 12 September 2002 address to the United Nations (UN) the US may go it alone against Iraq if the UN did not act. The President repeated this clear message in the National Security Strategy (NSS) document and in many subsequent statements. As recent events show, the US is willing to go to war without explicit UN approval or the support of traditional allies. The Iraq example demonstrates the possibility of unilateral US action in future conflicts.[4]

One ramification of unilateral action is US forces may not have access to surrounding airfields, railheads, and ports to deploy forces for a planned offensive. It will be far more difficult and time-consuming to get ground forces, particularly heavy ones, into a theater without widespread regional support; indeed, getting heavy ground units into a theater may be impossible. In a situation like this, planners must rely upon light ground forces or indigenous

allies supported by small US teams. This was the situation in Afghanistan in 2001. These conditions do not mean, however, US forces cannot conduct decisive offensive operations. Light units can use superior mobility, command and control (C^2), and organization to overmatch opponents while air power simultaneously brings overwhelming offensive firepower to the land fight.[5]

Limited access is not the only reason for greater demands on future counterland. Once fully committed in one theater, US land forces may not have enough offensive capacity to deal effectively with an adversary in another theater. The US land component can quickly run out of offensive firepower when executing distributed, "full spectrum" operations. Counterland air power can fill this gap. Even when the campaign's main effort is a traditional employment of land and air forces, US forces can employ an economy of force land mission and counterland firepower in another part of the campaign. In short, the combination of lighter army units and air forces can achieve decisive results without heavy ground units. But the required air offensive cannot be focused around the fringes to be decisive. Nor can it rely solely on preplanned Air Interdiction (INT) or traditional Close Air Support (CAS).[6]

The Jointness Imperative

Based on the realities of fighting America's conventional conflicts in the 21st century, it is crucial joint planners build campaigns using US assets in the manner necessary to achieve

---

[4] President. Speech. "Remarks at the United Nations General Assembly" (12 Sep 2002) [On-line]; available from http://www.whitehouse.gov/news/releases/2002/09/20020912-1.html; Internet; accessed 15 November 2002; President. The National Security Strategy, 6.

[5] Stephen Biddle, *Afghanistan and the Future of Warfare: Implications for Army and Defense Policy*(Carlisle Barracks, PA: Strategic Studies Institute, U.S. Army War College, November 2002), 8-10; Headquarters United States Air Force, Task Force Enduring Look, "Afghan Operations: The Facts" (Secret/NOFORN) (Washington D.C., June 2002), Unclassified extract.

[6] In the Persian Gulf War, the allies committed six heavy divisions (five US and one UK) plus the 101st Air Assault and 82nd Airborne Divisions. These are only the forces from VII Corps and XVII Airborne Corps. In today's army, such a deployment (including one UK division) would leave only 3 active divisions for any other contingency, none of them heavy. Robert H. Scales, *Certain Victory: The U.S. Army in the Gulf War,* (Washington: Office of the Chief

rapid, decisive results. However, AF and Joint doctrine for counterland operations have not kept up with nor reflect current air-to-ground capabilities. There are many reasons for this, but a key influence on planners and doctrine-writers is past experiences. Land warriors tend to view the effectiveness of counterland air power with skepticism. Combat experience and intuition convince some that air power cannot be consistently relied upon to deliver effective results in its counterland role. Meanwhile, air component planners, increasingly becoming effects-based thinkers, often think of counterland as an inefficient use of air power. These trends are exacerbated by the tendency to view lessons from specific past conflicts from a somewhat narrow point of view. The experiences of any single conflict, however heady, should not be considered in a vacuum but rather as a discrete point along the continuum of conflict. The common lessons from many conflicts will guide the way to victory in future wars.[7]

Evaluation Criteria and Methodology

This monograph reveals some of the important lessons for counterland air operations from the Persian Gulf War, the air campaign against Serbia, and the war against the Taliban and Al-Qaida in Afghanistan. Each conflict is examined, reviewing the fundamental counterland

---

of Staff, US Army, 1993), Figure 5-1. Contrast this to the recent US experience in Operation Iraqi Freedom, where only one heavy US Army division was used to take down the Ba'athist regime.

[7] A recent example of the lack of trust ground commanders place in the reliability and responsiveness of air power, particularly against land forces, is an interview of MGEN Franklin L. Hagenbeck, Commanding General of the 10th Mountain Division. See Robert H. McElroy, "Afghanistan: Fire Support for Operation Anaconda" in *Field Artillery* (September-October 2002), 5; Effects-based thinking is not particularly new, but the USAF has recently embraced what is called "Effects Based Operations" (EBO). What makes EBO "new," are a systems approach and the thought process of determining what effects are desired or undesired and how best to achieve them. EBO theorists differentiate EBO from attrition-based or maneuver-oriented approaches, although attrition or positional advantage may be the effect desired, so EBO does not really represent an independent form of war, but a different way of thinking about warfare. Edward C. Mann III, Gary Endersby, and Thomas Searle, *Thinking Effects: Effects-Based Methodology for Joint Operations* (Maxwell AFB, AL: Air University Press, October 2002), 26. Mann, Endersby, and Searle's treatise provides a comprehensive, though somewhat wordy and repetitive explanation of EBO. For a more succinct description of EBO (with better graphics), see Brigadier General David A. Deptula, *Effects-Based Operations: Change in the Nature of Warfare* (Arlington, VA: Aerospace Education Foundation, 2001) [On-line]; available at http://www.aef.org/pub/psbook.pdf; Internet; Accessed 9 February 2003; Compare the drastic difference in conclusions between Cohen, et al, *Gulf War Air Power Survey*, (Washington D.C.: United States Department of the Air Force, 1993), hereafter referred to as "GWAPS," and Robert H. Scales, *Certain Victory: The U.S. Army in*

approach and results (Chapter Two). The analysis yields the underlying mental model for counterland operations when the conflict began; what events, if any, caused the thinking and execution of CAS and INT missions to change during the operation; and the eventual nature of successful counterland, if this was achieved. Then the physical and psychological effects of counterland operations are reviewed and assessed. From the analysis of the three conflicts, key common lessons are delineated (Chapter Three). For the sake of brevity and relevance, not all the salient lessons are examined. Criteria for selecting lessons include commonality among the three conflicts and applicability to future operations. These criteria are obviously and necessarily subjective. Three key lessons stand out, labeled here as: the value of intelligence, surveillance, and reconnaissance (ISR); the power of innovation; and the overmatch of US air power. In addition, some significant limitations of air operations against ground forces are examined. Each of these lessons are explored for ODS, OAF and OEF. From the common lessons, specific implications and recommendations are derived (Chapter Four). See Appendix A for an explanation of the terms and definitions used in this work. A review of US counterland experiences since 1991 will lay the groundwork for the analysis.

---

the Gulf War. Both are assessments of the same conflict, but draw very different conclusions about how and why the US prevailed.

CHAPTER TWO

U.S. COUNTERLAND EXPERIENCES, 1991 - 2003.

"Experience is not what happens to you; it is what you do with what happens to you"

Aldous Huxley

CASE ONE – OPERATION DESERT STORM (1991)

Until the 1990s, the AF CAS and INT missions were securely tied to US Army Operations doctrine, defined in FM 100-5 and often called "AirLand Battle." Key AF leaders viewed air-to-ground air power almost entirely as fire support for land operations. When Iraq invaded Kuwait, much of the US military approached the attack and invasion of Iraq in this manner. However, as the conflict unfolded, the potential of air power alone against a land opponent emerged. The foundations of AF counterland thinking were questioned as the dominance of US air power became evident.[8]

The structure of the planned air campaign for the Persian Gulf War originally had no counterland element. The plan developed by Colonel John Warden and the Air Staff's "Checkmate" planning group called for six days of airstrikes against strategic targets and intended to force Iraq to yield by causing "strategic paralysis." Warden's plan rested on the

[8] Michael R. Gordon and General Bernard E. Trainor, *The General's War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown and Company, 1995), 132. Proof of the limited mindset of many TAC officers at the time is the focus of CENTCOM's OPLAN 1002 (defense of the Arabian peninsula). In the 1990 version of this plan, there are no strategic targets – no planned attacks on Leadership, Command and Control, or industrial infrastructure. All the targeting is focused on the opposition army and support of ground forces. Lt Gen Chuck Horner had responsibility for the air portion of this plan, revealing some of the reasons for his opposition to the nature of "Instant Thunder." Lt Gen Horner and General Robert D. Russ, Commander of TAC, are two leaders who typify the "support of ground forces" mindset. See Edward C. Mann III, *Thunder and Lightning: Desert Storm and the Airpower Debates* (Maxwell AFB, AL: Air University Press, April 1995), 28-30. It is an irony of military history that the most influential supporters of the AF's strategic plan in ODS were two Army officers, GEN Norman Schwarzkopf and GEN Colin Powell, while the most influential AF officer, Lt Gen Horner, viewed the AF's role primarily as tactical fire support. GEN Schwarzkopf, Lt Gen Horner's boss at CENTCOM, called General Mike Loh, AF Chief of Staff, and *asked him* for a strategic bombing campaign. It was at this point that Col Warden's plan (already being worked) came forward. Mann, 32; Deptula, 13.

reinvigoration of strategic bombing theory, largely subordinate to tactical air power thinking since World War Two. Only after the plan was briefed to GEN Colin S. Powell, Chairman of the Joint Chiefs of Staff, and at Powell's direction, were fielded military targets added.[9]

Warden later briefed the plan to GEN Norman Schwarzkopf, the Joint Force Commander (JFC) and Lt Gen Chuck Horner, the Joint Force Air Component Commander (JFACC). GEN Schwarzkopf viewed the Iraqi Republican Guard as an Iraqi center of gravity that should be attacked from the beginning. Lt Gen Horner took the air component shaping of the battlefield very seriously and doubted Iraq could be defeated with strategic attacks alone. Horner chose Brigadier General Buster Glosson and his "black hole" planning cell to manage daily planning of the air campaign. The overall campaign was divided into four phases: the strategic air campaign, a short phase to gain air superiority, air attacks on the Iraqi Army, and a ground attack into Iraq and Kuwait, which also included air attack. The sheer number of aircraft in theater allowed Central Command (CENTCOM) to conduct all of the three air-centric phases simultaneously.[10]

The air component initially focused counterland on INT missions. The objective was attrition of Iraqi forces, deemed necessary to provide allied land forces a numerical advantage for success. Attrition was measured mathematically as a percentage of combat effectiveness for individual enemy units. The initial goal was attrition to 50%. However, against a dug-in, inert enemy, cutting LOCs and interdicting supplies had little direct impact on the Iraqis. The air component began to refocus its efforts on direct attacks of Iraqi equipment. By day 20 of the conflict, sorties dedicated to strategic attack and counterair dropped from more than 600 to fewer

---

[9] Gordon and Trainor, 84. To understand Warden's theories, see John A. Warden, III, *The Air Campaign: Planning for Combat* (Washington D.C.: National Defense University Press, 1988) and John A. Warden III, "The Enemy as a System," *Airpower Journal* (Spring 1995). [Journal On-line]; available at http://www.airpower.maxwell.af.mil/airchronicles/apj/warden.html; Internet; Accessed 10 January 2003.

[10] Tom Clancy with Chuck Horner, *Every Man a Tiger* (New York: Putnam, 1999), 264-265, 274; *GWAPS, Volume II: Operations*,, 144, 199; Gordon and Trainor, 148.

than 200 per day while sorties against fielded forces increased from less than 200 to more than 800 per day. Additionally, planners and aircrews began to adopt innovative methods to improve attack effectiveness. New ideas flourished and the success of allied air operations had an increasing impact on the combat capability of the Iraqi Army.[11]

Physical Effects

The air campaign had several significant effects – key among these was destruction of Iraqi equipment. The air campaign alone destroyed an estimated 1,388 out of 3,475 Iraqi tanks, 929 of 3,080 Iraqi Armored Personnel Carriers, 1,153 of 2,475 Iraqi artillery pieces, and 952 Iraqi trucks. For many Iraqi divisions, allied air power destroyed Iraqi equipment beyond the point where individual units could function, even if the overall 50% attrition goal was not met. An exception was Republican Guard units in the second echelon. Air power dominated one of the world's largest land forces. Helpless to do anything about their destruction, the Iraqi Army folded up like a worn out tent in the face of the allied ground invasion.[12]

Psychological Effects

While destroying equipment is important, it is usually not sufficient to defeat a land force. Equipment can be hidden, sheltered, or repaired, and deception efforts can deceive analysts into thinking more destruction is taking place than in actuality. Iraqi ground units were also targeted psychologically. CENTAF conducted psychological operations against the Iraqi Army both directly, with assets like the EC-130E Commando Solo, and indirectly, as in using B-52s in missions against supply depots and specific enemy positions. In retrospect, the

[11] *GWAPS, Volume II: Effects and Effectiveness,* 94. The 50% attrition goal was specified in the Operational Order (OPORD). Desired attrition applied to tanks, artillery pieces, and individual soldiers; *GWAPS, Summary Report,* 13, 91-99.
[12] *GWAPS, Effects and Effectiveness,* 261; While over 50% of armor and artillery pieces were destroyed for many Iraqi divisions, the goal for personnel attrition was not met for any division.

psychological impact of the air campaign may have been the most important cause of degradation of the Iraqi Army.[13]

Some of the psychological impact on individual Iraqis and, by extension, their units came from unexpected sources. As RAND analyst Fred Frostic pointed out,

> By the time the ground war began, EPW [Enemy Prisoners of War] reports indicate that half the Iraqi forces had deserted. EPWs frequently commented that aircraft were always overhead. This meant that they were constantly under threat of attack. Compounding the psychological pressure was the fact that they believed that they were defenseless against the air attacks. Casualties from air attacks, on the other hand, were relatively low. By dispersing and staying away from their vehicles and weapons, they could survive.[14]

Thus, precision destroyed morale. Because airstrikes were accurate, due to innovations like using Laser Guided Bombs (LGBs) against vehicles, Iraqi soldiers avoided their equipment and became overwhelmed with a sense of helplessness. Thereby, many front line units effectively ceased to exist by the onset of the land campaign. The psychological impact was massive.[15]

It is estimated that "no fewer than 160,000 (40% of those deployed) deserted before G-Day. Some 85,251 more Iraqi officers and enlisted men surrendered to Coalition forces during the course of the 100-hour ground campaign."[16] In sum, over 240,000 Iraqis deserted or surrendered, out of approximately 400,000 originally in the Kuwaiti Theater of Operations.

---

[13] *GWAPS, Effects and Effectiveness,* 225; Stephen T. Hosmer, *Psychological Effects of U.S. Air Operations in Four Wars, 1941-1991: Lessons for U.S. Commanders* (Santa Monica, CA: RAND Project Air Force for the United States Air Force, 1996), 142-152. B-52s during ODS were used in many ways, including standoff launches of cruise missiles and direct attack. Those striking the Iraqi Army directly employed mostly Mk-82 500-pound or M-117 750-pound general purpose weapons. Both weapons are dropped in long "sticks" of multiple weapons (up to 51 of either), allowing the B-52 to "drag the stick" over an enemy target. As employed in ODS, these weapons are area weapons with limited precision. This means they are best used against large target areas such as industrial facilities, ammo dumps, troop or equipment marshalling areas, etc. Though direct hits are rare, this use of unguided weapons can cause widespread damage and degradation and cause a great deal of fear and disorder among enemy units.

[14] Fred Frostic, Air *Campaign Against the Iraqi Army in the Kuwaiti Theater of Operations* (Santa Monica, CA: RAND, 1994), 64.

[15] *GWAPS, Volume II: Effects and Effectiveness,* 221-226; Knowing that LGBs would hit their intended targets, Iraqis figured out they could avoid being killed by staying away from their vehicles. *GWAPS, Volume II: Effects and Effectiveness,* 102.

Virtually none of these engaged in serious fighting. While few deserters were from the Republican Guard, the forward echelon's lack of resistance undermined the Iraqi Army's chance of withstanding the ground invasion. Even those units still adequately manned largely did not stand and fight. Forces surrendered en masse before being engaged, in an obviously preplanned manner. Many pieces of equipment were abandoned in place. Those units that did move with their vehicles did so largely to flee. The facts indicate Saddam's Army was a shell of its former self before a single allied land unit crossed the line of departure. Allied armor units used less than 2% of the 220,000 tank rounds shipped to theater during the campaign and the U.S. logistics system supplied mostly fuel and food to the quickly advancing coalition divisions. AirLand Battle doctrine had succeeded, but the overwhelming dominance of the air arm pointed to a mode of warfighting beyond FM 100-5.[17]

Assessment

The Persian Gulf War demonstrated the ability of modern air power to dominate a land opponent, under specific circumstances. The Iraqi Army, organized along former Soviet Union lines and intending to fight a war of exhaustion, was overwhelmed by the ubiquitous, intense, and persistent allied air campaign. The physical effects on the Iraqi Army were devastating, as CENTAF assets systematically destroyed thousands of Iraqi vehicles. The psychological effects were even more influential, for all intents and purposes destroying the Iraqi Army as a coherent fighting force. The Persian Gulf War demonstrated US air power's potential dominance over opposing air and land forces.

---

[16] Hosmer, p. 153. *GWAPS* estimates only 336,000 Iraqi forces in the Kuwait Theater of Operations by G-day. The difference between Hosmer and the GWAPS is due to GWAPS factoring in a 20% rate of soldiers on leave. In either case, Iraqi unit strength was very low, averaging between 8,000 – 9,000 personnel per division.

CASE TWO – OPERATION ALLIED FORCE (1999)

> *"The operational setting of Yugoslavia contrasted sharply with the one presented to coalition planners by Iraq in 1991. Defined by a series of interwoven valleys partly surrounded by mountains and protected by low cloud cover and fog, Serbia and Kosovo made up an area smaller than the state of Kentucky (39,000 square miles), with Kosovo itself no larger than the Los Angeles metropolitan area. Its topography and weather – compounded by an enemy IADS that was guaranteed to make offensive operations both difficult and dangerous – promised to provide a unique challenge for NATO air power."*[18]

After devastating the Iraqi Army in 1991, some advocates believed air power alone could win wars; in 1999, air power got its chance. NATO's stated goal was military action "directed towards disrupting the violent attacks being committed by the Serb Army and Special Police Forces and weakening their ability to cause further humanitarian catastrophe." NATO would attack only if Serbian President Slobodan Milosevic failed to comply with NATO's directives. When Milosevic did not comply, NATO began air strikes on the night of 24 March 1999.[19]

NATO used a de facto strategy of escalation in OAF. Only a few targets were approved initially and the list grew slowly. NATO leaders seemed to believe simply bombing some critical targets in Serbia would bring Milosevic into compliance. NATO and Milosevic expected a brief bombing campaign, followed by more negotiations. President Clinton's declaration, "I don't intend to put our troops in Kosovo to fight a war,"[20] combined with the terrain, weather, and dispersion of *Ministerstvo Unuprasnij Poslava* (MUP, the Serbian Interior Police) and *Vojska Jugoslavskaya* (VJ, the Serbian Army) forces in Kosovo made counterland operations

---

[17] Benjamin S. Lambeth, "Storm over the Desert: A New Assessment," *Joint Forces Quarterly* (Winter 2000-2001), 32.
[18] Benjamin S. Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment* (Santa Monica, CA: RAND for the United States Air Force, 2001), 17.
[19] "Dr Javier Solana, Secretary General of NATO, Press Release (1999)040, March 23, 1999," *North Atlantic Treaty Organization website* [On-line]; available at http://www.nato.int/docu/pr/1999/p99-040e.htm; Internet; accessed 20 Nov 2002.
[20] Quoted in Clines article.

very difficult. The escalation approach may have been politically necessary, given the nature of the NATO alliance, but Lieutenant General Mike Short, the Combined Force Air Component Commander (CFACC), wanted a more aggressive campaign, one that would "go downtown on the first night, hitting the power, telephone, command-and-control sites and Milosevic's bunkers."[21] Lt Gen Short did not get the chance to unleash a massive opening attack and the campaign unfolded slowly.[22]

After initial attacks to establish air superiority, air strikes focused mostly on C^2 and military infrastructure targets. During the first week of attacks, Serbian forces stepped up their ethnic cleansing, at least partially to strip away civilian support from the Kosovo Liberation Army (KLA), a paramilitary group of rebel Albanians. Allied air power initially could do nothing to stop VJ and MUP activity. When the national leadership realized a few days of bombing would not cause Serbian accession, emphasis shifted to trying to stop VJ and MUP military activity in Kosovo proper, initially focusing on interdiction of Serbian forces' supply lines and storage sites. Effective, direct attacks against VJ units were virtually impossible since the Serbs dispersed their forces, hid or camouflaged their vehicles, and moved only under cover of weather, night, or both. Clearly, counterland operations without friendly ground units in theater were not working.[23]

Counterland without a Land Component

---

[21] Michael Ignatieff, *Virtual War: Kosovo and Beyond* (New York: Henry Holt and Company, 2000), 96.
[22] Tim Judah, *Kosovo: War and Revenge* (New Haven: Yale University Press, 2000), 229.
[23] Bradley Graham and William Drozdiak, "Allied action fails to stop Serb brutality," *Washington Post*, 31 March 1999 [Online]; available at http://www.wpni.com/wp-srv/inatl/longterm/balkans/stories/military033199.htm; Internet; accessed 15 January 2003; Craig R. Whitney, "NATO Chief Admits Bombs Fail to Stem Serb Operations," *New York Times*, 28 April 1999; Air Superiority was established quickly but could be maintained only with great effort against Serbia's IADS. Air Supremacy, achieved in other recent campaigns, was never established. The minute losses by NATO seem to contradict this, but aircrews regularly adjusted tactics, threat-reacted, and, in some cases, aborted bomb runs throughout the campaign due to the SAM threat.

AF planners and crews attempted to solve the problem of targeting VJ and MUP ground units in two primary ways: using innovative Intelligence, Surveillance, and Reconnaissance (ISR) techniques, some involving new technology; to enhance the effectiveness of airstrikes; and coordinating with the KLA, the only friendly ground forces in theater. A new set of techniques for detecting, locating, and targeting enemy positions emerged during OAF. This process involved space assets, platforms like the E-8 Joint Surveillance Target Attack Radar System (Joint STARS) and the RQ-1 Predator Unmanned Aerial Vehicle (UAV), and the improving C^2 bandwidth of agencies like the Combined Air Operations Center (CAOC) in Vicenza, Italy. These elements worked with existing nodes of the air control network. Operations to attack perishable targets quickly, now known as Time Sensitive Targeting (TST), were only somewhat successful during OAF.[24]

OAF revealed the limitations of technologically advanced ISR. Joint STARS could not detect motionless VJ vehicles. More importantly, the E-8 had difficulty identifying a vehicle as "hostile." Joint STARS crews tried to solve this problem by correlating their information with data from RQ-1 UAVs. However, at that time the RQ-1 was not fully integrated into ISR operations. Crews and planners patched together procedures to make full use of the available technology. However, for most of the war, Forward Air Controllers (FACs) had to identify most targets; this was difficult in the daytime and nearly impossible at night or in poor weather.[25]

Increased efforts to degrade Serbia's Integrated Air Defense System (IADS) allowed aircraft vulnerable to low altitude threats, like the AC-130 and A-10, to operate with greater freedom. These aircraft, with crews specifically trained for counterland, were more effective than

[24] Lt Col Phil M. Haun, "Airpower versus a Fielded Army: A Construct for Air Operations in the Twenty-First Century," *Aerospace Power Journal* (Winter 2001).
[25] Lambeth, 125.

the fighters and bombers employed earlier. These efforts in aggregate actually increased the VJ and MUP dispersion and therefore made them harder to locate and kill.

> Without an opposing ground force, the 3rd Army in Kosovo did not have to concern themselves with a ground attack other than the small forces of the Kosovo Liberation Army (KLA) in Mt. Pastric. Thus their maneuver and defensive posture was only against attack from the air…the asymmetric alignment of a ground force executing an operation of harassment and terror on the ethnic Albanians and an opposing air force attempting to strike them was surreal.[26]

It appeared the presence of ground forces was needed for effective counterland. NATO sought a friendly ground force to help against the Serbs. NATO found an unlikely friend in the KLA.[27]

Coordination with the KLA began in earnest with Operation ARROW, an attempted KLA counteroffensive against the VJ. While not a full ally of the KLA, NATO helped the rebel Albanians with emergency CAS around Mount Pastrik. Using innovative techniques, such as using cell phones to pass information, the KLA provided target intelligence to NATO aircrews, improving effectiveness. The mere presence of a viable fighting force on the battlefield forced the VJ to mass and move, making VJ forces vulnerable to air attack. Using the KLA as a proxy ground force showed promise as a method in future conflicts.[28]

Physical Effects

NATO's claims of vehicles destroyed in Kosovo appeared impressive compared to the VJ's known strength. "In its final tally as Operation Allied Force ended, the U.S. Defense Department settled on 700 out of 1500 tanks, APCs, and artillery pieces destroyed altogether in Kosovo."[29] However, NATO quickly modified this assessment. After entering Kosovo and

---

[26] Patrick Sheets, "Air War Over Serbia," *Lessons From Kosovo: the KFOR Experience*, edited by Larry K. Wentz (Washington D.C.: DOD Command and Control Research Program, July 2002), 110.
[27] Lambeth, 120.
[28] Using only unclassified sources, it is impossible to determine if the experiences in OAF cooperating with the KLA had any influence over later operations in Afghanistan using small SOF teams and the proxy Northern Alliance army. Suffice it to say, the possibilities demonstrated with the KLA in OAF were at least a notional precursor to operations in OEF, if not a direct influence or model.
[29] Lambeth, 129.

sending teams to look for evidence of real BDA, only 52 vehicles were confirmed destroyed. Although the real number of vehicles destroyed is not known, it is generally agreed the number is 100 or less. More importantly, the campaign did not greatly impede VJ and MUP activities in Kosovo. While attacks against fixed targets were successful at destroying C^2, key infrastructure, and supply depots, with no threat of a ground invasion, dominant counterland was not tenable. Fielded forces – mobile and fleeting targets unless forced to be otherwise – are often too difficult to sort and kill when enemy ground units are not in traditional defensive positions, construct convincing phony targets, and move only under favorable conditions. Combined with a massive civilian refugee situation, targeting became even more difficult. During those rare occasions when KLA activity forced the Serbs to behave like an army threatened by another army, the success of air operations against them improved. However, planners could only hope for limited effectiveness for the counterland campaign and after five or six weeks, there were more Serbian forces in Kosovo than when the campaign began.[30]

Psychological Effects

Unlike the shattered Iraqi Army coalition land forces faced in February 1991, the Serbian Army never lost its unit cohesion or ceased to function as an effective military orce. While there were no EPWs to interview, the VJ remained defiant even as they vacated Kosovo. Brigadier General Daniel P. Leaf, who commanded the 31st Air Expeditionary Wing, is correct that "counting tanks is irrelevant. The fact is they withdrew and while they took tanks with them, they returned to a country whose military infrastructure has been ruined."[31] However, despite a

[30] Ignatieff, 62; Lambeth, 37, 122, 130-132.
[31] Quoted in Ignatieff, 106.

huge level of effort, counterland operations in Kosovo did not have the intended effect on the Serbian ground forces, either physically or psychologically.[32]

Assessment

The experiences over Kosovo in OAF were both liberating and frustrating for AF planners and leaders. While OAF succeeded in accomplishing the campaign objectives by eventually forcing Milosevic to agree to NATO demands, it had only a limited impact on the Serbian Army. Due to deception efforts, OAF's counterland campaign had relatively small physical effects, particularly considering how many sorties the CFACC designated for counterland. Psychologically, the Serbs remained defiant and apparently confident to the last day. Facing a dispersed Serbian force in an environment ranging from rugged mountains to dense urban, aircrews in OAF were forced to find innovative ways to locate and identify targets. OAF presented several new problems to the AF – the need to locate, identify, and destroy a dispersed ground force with no expectation of any form of friendly land campaign, using a new set of tools for ISR. The results were mixed at best. OAF revealed how difficult counterland without a land component really is, especially in an adverse operational environment. These problems would be faced again in the conflict in Afghanistan.

CASE THREE – OPERATION ENDURING FREEDOM (2001 – 2003)

> *"Most air attacks occurred around Afghanistan's perimeter, because the rugged central highlands were not a major operating area for the Taliban or al Qaeda. By the middle of October, most fixed assets worth striking had already been hit, so combat sorties turned to targeting Taliban and al Qaeda forces in the field."*[33]

[32] Compare the disorderly flight of the Iraqi Army from Kuwait to the methodical, organized exit of the Serbian Army from Kosovo. Steven Lee Myers, "Crisis in the Balkans: The Toll; Damage to Serb Military Less Than Expected," *New York Times* (June 28, 1999).
[33] Michael E. O'Hanlon, "A Flawed Masterpiece," *Foreign Affairs*, May/June 2002, 51.

After the events of September 11, 2001, the US began operations to overthrow the Islamic Emirate of Afghanistan (IEA), a radical regime known to harbor and support the activities of the Al-Qaida terrorist network. On paper, the Taliban Army was no match for the US military. With insignificant air forces and air defenses, and possessing only obsolete Soviet land equipment, the Taliban Army posed little threat to even a modest western army in a generic fight. However, there were several qualities about the Taliban Army and the theater of operations making OEF a significant challenge.[34]

Afghanistan is a nasty place to fight a war. Landlocked and accessible by road only through Central Asia, Pakistan, or Iran, deploying to Afghanistan is one of the most challenging aspects of campaigning there. The environment makes military operations very difficult, with rugged terrain, inhospitable weather, little if any infrastructure, and a dangerous political situation where allegiances change rapidly. The enemy force, made up of a mix of ethnic groups, is proud and tenacious. Although Afghanis can be persuaded to switch allengiances mid-fight, the Taliban Army had at its core a group of tough and fairly well-trained personnel. Foreigners, many members of Al-Qaida, who fought with the Taliban Army, sometimes referred to as "Afghan Arabs," were a particularly intransigent element within the enemy force. Often possessing nothing to lose and ideologically aligned with Usama Bin Laden and his brand of radical Islam, the Al-Qaida fighters sometimes fought to the death and wanted nothing more than to inflict US casualties. Afghanistan under the Taliban regime was an ideal test bed for fighting a ground war with limited access.[35]

[34] Hereafter the military of the IEA is called the Taliban Army.
[35] Biddle, 13-15. Biddle's monograph is one of the best yet published as a source of the sequence of events, names of battles, and general results. For a short read on Afghanistan's history, I suggest Martin Ewans, *Afghanistan: A Short History of Its People and Politics* (New York: Harper Collins, 2002).

US combat operations began in Afghanistan with only a brief time to plan and no existing plan on the shelf. Additionally, part of the Combat Air Forces, specifically bombers, were inexperienced in counterland procedures yet conducted much of the initial counterland operations. Conventional air units worked closely with Special Operating Forces (SOF), Marines, and others – neither the bomber crews nor the SOF teams were burdened with preconceived notions of what counterland was supposed to be. To top it off, many of the weapons employed had never been used against fielded troops and equipment. The B-1s, B-52s, F-15Es, F/A-18s, and ground controllers that defeated the Taliban by mid-December 2001 could not rely upon existing doctrine to describe their task.[36]

CENTCOM planners devised a four phase operation; the first was preparation and planning. The second phase, described as "shaping operations" commenced on 7 October 2001. Phase II for US forces consisted mostly of air operations – first eliminating Afghanistan's air defense and striking strategic targets, then targeting Taliban Army and Al-Qaida locations in coordination with the friendly Afghanistan Military Forces (AMF). Attacks on the Taliban Army consisted of aerial attacks supported by SOF teams and their Tactical Air Controllers (ETACs). The AMF was generally in poor shape to conduct offensive operations against well-defended Taliban positions without US air power providing precise fires.[37]

The counterland campaign in Afghanistan consisted of two distinct parts. The first part saw SOF working with the AMF, popularly referred to as the "Northern Alliance" (this part

[36] Bomber crews normally spend less than 10% of their training on counterland. Most bomber crews had little experience receiving "9-line briefings" (the standard format for CAS) from ground parties and entering coordinates into their GPS-guided JDAMs. Satellite-guided weapons had not been used for counterland before OEF.

[37] Biddle points out that on several occasions, the AMF was required to assault Taliban positions in a very conventional way and only with skilled maneuver were these actions successful. My individual sources emphasize how AMF maneuver was used primarily to put precise AF fires on the Taliban. The thing to keep in mind is all the fights involving SF/AMF alone took place in little more than 30 days (21 Oct – 6 Dec 2001) across the entire Afghanistan area of operations. Contrast this with the 78 day campaign in OAF or the 38 day, much more massive counterland campaign in ODS. See Biddle, 38-43.

corresponds to Phase II). The next part included operations with conventional US ground forces, specifically US Army light infantry units and Marines (this was Phase III – referred to as "Decisive Operations"). The AMF and SOF were still active, but the focus shifted somewhat to conventional ground units. The significance of this split is that the conduct of the campaign changed once conventional US ground forces were in theater. This change directly impacted the effectiveness of counterland operations. Before Phase II was complete, the Taliban government capitulated and a new government was installed.[38]

In Phase II, US SOF and the AMF coordinated their activities with air assets to attack Taliban Army positions. The AMF and Taliban had been fighting along the same basic front for over five years. The Taliban Army outnumbered the AMF and had parity in equipment and capabilities. Once SOF convinced AMF leaders that with air power, the AMF could break the stalemate and conduct successful offensive operations, the campaign unfolded rapidly. Combining dominant fires from the air with coordinated maneuver by AMF units, the Taliban Army was defeated in less than 60 days, much sooner than expected.[39]

When Phase III began, the counterland mindset shifted – the conventional Army viewed air power as fire support. The best example of this shift was Operation ANACONDA, the effort to clear Al-Qaida fighters from the Shah-i-Khot valley. ANACONDA, designed as a trap for Al-Qaida, designated the AMF forces as the main effort with the task of driving Al-Qaida toward the Pakistan border along a few specific routes. Meanwhile, units of the 10th Mountain and 101st Air Assault Divisions established blocking positions along the expected routes of retreat. The

---

[38] Task Force Enduring Look (SECRET/NOFORN), 2-1, extract unclassified; David Rohde with Norimitsu Onishi, "A Nation Challenged: Last Stronghold; Taliban Abandon Last Stronghold; Omar is not Found," *New York Times*, December 8, 2001; Steven Erlanger, "A Nation Challenged: After the Taliban; After Arm-Twisting, Afghan Factions Pick Interim Government and Leader," *New York Times*, December 6, 2001. Mullah Omar, the leader of the Taliban left Kandahar before December 8th (the date Kandahar fell) and the Northern Alliance selected Hamid Karzai as the new head of government on December 6th. Karzai did not take office until December 22.

operation began with only minimal air support (initially only a single B-52, a single B-1, and four F-15Es). The AMF encountered unexpected resistance and failed to reach their objectives – the Al-Qaida then turned against the US forces. The US units called for and received air support, but with few aircraft readily available, US forces remained in defensive positions much longer than expected. US air and land power prevailed, but not before unnecessary US casualties.[40]

The differences between how Operation ANACONDA was planned compared to earlier OEF operations are notable. With no choice but to rely upon air power to greatly enhance the limited offensive capability of the AMF, the SOF and AMF exploited the huge US air power overmatch to achieve campaign objectives much more quickly than anticipated. Conversely, the planners for ANACONDA did not believe they needed air power to be decisive, so they neglected it. When the enemy reacted in an unexpected way, circumstances revealed the vulnerability of modern ground forces, even when facing a relatively primitive foe. Despite advanced technology, world-class equipment, and highly motivated, well-trained US soldiers, even a lightly armed and technologically limited opponent can surprise, seriously threaten, and potentially overwhelm US land forces.[41]

Physical Effects

Formal accounting of the damage done to the Taliban Army during OEF has not been published publicly, so it is impossible to assess the numbers of vehicles destroyed or soldiers killed. What is clear is the Taliban Army was defeated in 60 days, from October 7th to December 6th, 2001. The air component conducted counterland operations from October 21st on. The remaining Al-Qaida forces were defeated in two operations: at Tora Bora during 16 days in

[39] Stephen Tanner, *Afghanistan: A Military History from Alexander the Great to the Fall of the Taliban* (New York: De Capo Press, 2002), 283-284.
[40] "2 Mar 02, Tex's Rendition," unpublished personal memoire of an F-15E crewmember flying in OEF.

December 2001; and at Shah-i-Khot valley during 12 days in March 2002. After March 2002, there was sporadic fighting with Al-Qaida and Taliban remnants and other anti-government factions but the main combat period was over.[42]

These results were achieved largely through coordinated effort between US SOF teams acting as liaisons to the AMF and eyes on the target for US air power. A typical tactic was to use AMF forces in a feint to either draw the Taliban Army out of their entrenchments or to fix them, and then bring in air assets to precisely target Taliban positions. AMF ground forces would then maneuver and take the Taliban position. Using these and other methods, the coalition systematically broke the Taliban Army's hold on their positions and forced them to either move or die in place. "The purpose of the ground forces [AMF] initially was to get the ETACs forward to get eyes on the target to call in air strikes." The psychological impact of these operations appears to have been key to their success.[43]

Psychological Effects

Precision attacks on the Taliban Army fielded forces in OEF could get a double benefit – kill targets, whether equipment or personnel, and damage morale and organizational cohesion simultaneously. The morale of the Taliban Army proper was relatively easy to shatter. Many of the native Afghans resented the presence of the Afghan Arabs and other foreigners, were poorly trained, and were culturally conditioned to defect or desert when the time was right. A few days of intense bombing was adequate to psychologically defeat them. However, much of the actual fighting was done by the hard-core element of Al-Qaida adherents. Evidence shows morale was

---

[41] The 10th Mountain Division did not bring its Air Support Operations Squadron (ASOS) to Afghanistan for reasons now unclear and initially suffered from a shortage of ETACs in theater.
[42] Biddle, 8-12.
[43] Major John Schmitt, USAF, Chief of Targeting / Fire Support Officer, 5th Special Forces Group, Uzbekistan, interview by author, Ft. Leavenworth, KS, November 2002.

not easily broken – even against insurmountable odds in hopeless situations – often they would not stop fighting until they were dead or in custody.[44]

Assessment

The conflict in Afghanistan demonstrated how fully integrated air and land power, even without a great deal of land force offensive firepower, can have a decisive outcome. In contrast, OEF also revealed when component activities are not well integrated, even a primitive adversary can give US forces a tough test. The US air component dominated the ground in Afghanistan. The psychological impact on the Taliban Army was critical; meanwhile, the hard core elements in Al Qaida proved relatively invulnerable to psychological effects. OEF represents a form of future war where limited access and a challenging environment necessitate new ways of thinking about land warfare.

In the three major conflicts since the end of the Cold War, US counterland doctrine and practice has changed a great deal. From a Cold War paradigm relegated to supporting the fight against mass Soviet armies on the plains of northern Europe, counterland has emerged as a key form of offensive warfare. In Iraq, within the framework of existing AirLand battle doctrine, the air component came very close to defeating a large, conventional army by itself. In Kosovo, the limits of a single-component approach were revealed in ugly detail as the counterland campaign was mostly ineffective although political objectives were partially met. Finally, in Afghanistan, a combination of small, light land units and massive US air power, though put into practice more out of necessity than by design, proved decisive. In the next chapter, a few of the key common lessons from these three conflicts are assessed.

[44] Biddle, 12-23.

CHAPTER THREE

THE COMMON LESSONS

"Every thing in war is very simple, but the simplest thing is difficult."

Carl von Clausewitz

LESSON ONE: THE VALUE OF INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE (ISR)

It may seem obvious that targets are more effectively destroyed if something or someone finds and watches the target for the shooter. But there are many ways to acquire and use battlefield information, and not all are appropriate in a given situation. Information useful in counterland may come from satellite imagery, UAV feeds, Joint STARS data, IR images from a targeting pod, visual information from manned systems or things seen by units on the ground, to name just a few. ISR information can be from any one of these sources, but it is most effective when a person is available to discern the important aspects of the information and then direct action with little delay. The US military made great strides in ISR over the past few decades by purchasing systems and developing procedures to collect target information, make sense of it, and assign systems to attack the target. The experiences of ODS, OAF, and OEF reveal a variety of methods are necessary for the best results – notably, visual information from ground observers has proven just as effective, and in some cases more important, than the other methods.

What looks like a destroyed tank in a photograph may be obviously a dummy to an SF Team. What appear to be hostile vehicles moving along a road to a Joint STARS operator may be identified as fleeing refugees by an ETAC. As quickly as the US develops ISR technology, US adversaries are figuring out ways to fool our sensors and high-tech systems. In short, it often takes a person on location to know when another person is trying to fool them. This is not to say technology-based ISR is ineffective; on the contrary, recent experience demonstrates technology

gives US forces a huge edge. Rather, the value of human eyes on the target should not be lost in the drive to extend our technological advantage. Examples from each of the three conflicts will help illustrate the value of ISR.[45]

Desert Storm: Airborne ISR

For the majority of ODS there were no ground units able to provide target intelligence for air operations. Electronic methods existed, such as using imagery from U-2 aircraft, but for the best real-time information, CENTAF used Air FACs (AFAC) and Killer Scouts for battlefield intelligence. Joint STARS proved very successful at augmenting target intelligence, particularly in terms of big-picture assessments of Iraqi movements. Within the Kuwaiti Theater of Operations (KTO) where the Iraqi Army was largely static, however, allied pilots had to find their own targets using AFAC or Killer Scout procedures. Once the ground campaign began, traditional CAS operations were employed, especially by the Marines, but to the heavy allied ground force, CAS was more or less a welcome luxury rather than a necessity.[46]

ODS proved in fairly good conditions on flat terrain without much interference from enemy air defenses, US air power can successfully find and destroy a fielded land force by itself. If the Iraqi tactical air defense system was more robust, or the Iraqis used an intelligent, mobile defense, or the terrain was less open and featureless, it is likely the air component would not

[45] OAF provided ample examples of an adversary successfully fooling high tech systems. The Serbs used standard Soviet deception tactics and some innovative schemes of their own. NATO leaders did not know how many VJ personnel or how much equipment was in Kosovo, with an area smaller than Connecticut, until the Serbian forces withdrew. The actual numbers surprised analysts.

[46] *GWAPS Operations*, 305; *GWAPS Effects and Effectivenes*, 103; The battle of Khafji and the pursuit out of Kuwait City are the best examples of Joint STARS making sense out of a potentially chaotic situation in near real-time. Without Joint STARS, air operations at Khafji would have been delayed, temporarily changing the outcome; out of Kuwait City, more Iraqi units would undoubtedly escaped. For accounts of the battle of Khafji, see Gulf War Air Power Survey, Volume II, Operations,273-275, and Effects and Effectivenes, 234-242; Rick Atkinson, Crusade: The Untold Story of the Persian Gulf War (Boston: Houghton Mifflin Company, 1993), 189-215; and Gordon and Trainor, 267-288. The best technical description of the Iraqi flight out of Kuwait City is probably found in GWAPS Summary Report, 113-114.

have had the success it enjoyed using almost strictly airborne ISR. In other words, a scenario like OAF would be a much tougher operational problem to solve.

Allied Force: Electronic ISR

With no allied ground forces to provide human discernment, with a very unreliable and furtive ally in the KLA, and with an enemy ground force able to hunker down for long periods in dense terrain, aircrews in OAF faced one of the most difficult counterland environments ever encountered. The only viable solution was technology. Though ultimately ineffective in OAF's counterland campaign, the use of technology proved a watershed for future US operations. Perhaps the best example of this progress is the use of UAVs for battlefield information.

Using UAVs, like the RQ-1 Predator, for counterland-usable intelligence was not a simple task. Two Predators orbited at about 5,000 feet MSL near the target area collecting electro-optical and infrared images for target location and identification. A third Predator then laser-designated a desired target to acquire precise target data. This data was passed through assets like AWACS or Joint STARS to the shooter or the shooter's airborne controller. These aircraft then acquired the target, made an assessment of the target's validity (very difficult at night), and attacked the target, usually with an LGB. This process, involving several multi-million dollar airborne assets, took time and was not always smoothly executed. However, the potential of the US's large advantage in ISR technologies became apparent in OAF.[47]

Two lessons stand out from OAF regarding the use of technology. First, technological solutions implemented during execution with little testing and analysis are usually far less effective than if they are fully developed and trained into the force. Second, adversaries will attempt to counter technological solutions. Therefore, any technology has a limited shelf life and must be continually improved or replaced with other ideas. There is no bullet-proof

technological solution to any given tactical or operational problem. The best solution is to take the benefits technology allows and meld them with information gathered and assessed by people on the scene. This is exactly what happened during OEF.

Enduring Freedom: ISR on the Ground

By October 2001 when OEF began, casual observers may have believed technology and training had advanced to the point where direct human interaction would be less necessary than before. To the contrary, OEF demonstrated the enduring value of direct human involvement in acquiring and interpreting usable information. This is not to say technology developed previously was absent from OEF; instead, the technologies developed in ODS, OAF, and elsewhere greatly enhanced the effectiveness of Afghanistan operations. However, for counterland attacks to be most effective, evidence from OEF shows in specific situations eyes on the target provided by ground units combined with information provided by other sources provides the best real-time battlefield intelligence and can facilitate decisive results.[48]

When active military operations in Afghanistan began, the US could have relied solely on its vast technological edge to begin attacks on Taliban Army positions. The collective platforms, tools, and connectivity of US ISR, allowing "sensor-to-shooter" concepts to become a reality, were far more developed than in OAF. The Predator UAV had matured into a vital part of battlefield information collection. Yet, when it came time to locate and identify targets for US aircraft to attack, the US relied upon the robust, tech-based information network in conjunction with US personnel in place – such as US Army SOF teams and their USAF ETACs. This decision was made for many reasons – the shorter time to get people in place than platforms, the region's minimal infrastructure to support complex technology, and initial delays with access to

[47] Lambeth, p. 95.
[48] Task Force Enduring Look, unclassified extract.

name a few – but the result was more successful than believed possible at the time. Preliminary analysis indicates human interaction and discernment allowed the air component to decisively defeat the bulk of the Taliban Army during the "shaping" phase of the campaign. In other words, massive aerial attack combined with nimble ground maneuver proved devastating to the Taliban Army.

All three of the conflicts analyzed reaffirmed the value of ISR but in different ways. In ODS, CENTAF responded to difficulties in targeting Iraqi Army positions with several innovations, most designed to more effectively locate and confirm destruction of targets using manned, airborne assets. In OAF, the air component attempted to apply decisive force with a suite of high-technology systems working together. It was only partially successful although OAF experiences paved the way for more successful applications in the future. Finally, in OEF, the effectiveness of allied air operations against fielded Taliban Army forces increased dramatically when the number of SOF teams on the ground increased in November 2002.

This lesson cannot be lost on future US military planners and decision-makers. Technology, despite its promises, is no substitute for human discernment and accurate, two-way communication. When technology enables and enhances these characteristics, it is invaluable and makes operations more effective; when technology attempts to replace the human element in identification and targeting, it may not only fail, but also may jeopardize military and political success of operations. The various sources of battlefield intelligence are most effective when they are integrated and complimentary. Only when this is achieved by planners and operators does the synergy of technology and human capabilities become fully realized. The same is true of the power of innovation.

LESSON TWO: THE POWER OF INNOVATION

In each of the cases considered, the employment methodologies defined in doctrine and accepted practice were not necessarily the most applicable once conflict began. Rather, aircrews and planners developed innovative, often non-doctrinal means to accomplish their tasks. In ODS, the 38-day counterland campaign before the ground phase was unplanned in terms of duration, scope, and effects. In OAF, a much longer campaign than anticipated was required to coerce the Serbs and the AF quickly discovered it was ill-prepared to conduct a counterland campaign without friendly ground forces. In OEF, traditional counterland was not even possible at first and a new balance of air and land power was applied throughout the entire campaign. In each case, innovative approaches were employed for the most effective results. This trend is likely to continue as warfare quickly evolves from the cold war model into new patterns. This chapter explores three categories of innovation in the counterland mission, well represented by the conflicts studied so far: innovations in tactics, technology, and doctrine.

Desert Storm: Innovation in Tactics

In *Airpower against an Army Challenge and Response in CENTAF's Duel with the Republican Guard,* Lt Col William F. Andrews, a mission commander during ODS, director of operations of a fighter squadron, and graduate of the School of Advanced Airpower Studies, points out six tactical innovations used by CENTAF in counterland operations. These are: using A-10s in a deep interdiction role; using A-10s for deep reconnaissance; increasing sortie rates to improve aircrew effectiveness; use of "Killer Scouts"; use of LGBs against fielded vehicles; and

the use of cockpit tapes for BDA. Faced with conducting counterland operations on a huge scale, CENTAF innovated rapidly, testing and implementing new tactics with great success.[49]

The innovative uses of A-10s in the deep battlefield and LGBs against fielded equipment have had a long lasting effect. Before ODS, platforms were associated with missions in the minds of the USAF's most influential tactical leaders. For example, the A-10 was (and largely still is) associated strictly with close support of ground forces while "strategic" bombers were almost exclusively associated with Strategic Attack. ODS revealed the meaninglessness of platform-centric employment. Despite these experiences and their confirmation in subsequent conflicts, this lesson is very difficult for some military planners to accept.

Other lessons have been fully implemented and are now counterland standards. For example, in ODS CENTAF instituted the use of "killboxes," 30 by 30 minute chunks of land and airspace, designed to solve certain coordination problems and better enable aircrews to find and destroy fielded forces. Killbox operations and other innovations in tactics allowed CENTAF to shift its focus. Beginning on Day 16 of the air campaign until the ground phase began, planners began efforts to increase the rate of destruction of Iraqi equipment; innovation liberated air power from methodologies dictated by preconceived notions of what air forces could achieve against land opponents.[50]

Allied Force: Innovation in Technology

In contrast to ODS, planners and crews in OAF knew the conflict had to be won solely with air power. There was no doctrine adequately describing such a mission (nor is there today). Therefore, the air component focused mostly on technological innovations to achieve the desired outcomes. The absence of the land component also freed air planners from any semblance of

[49] William F. Andrews, *Airpower against an Army Challenge and Response in CENTAF's Duel with the Republican Guard* (Maxwell AFB, AL: Air University Press, February 1998), 42.

AirLand Battle doctrine and allowed the trend towards tactical innovation to continue. Still, technological breakthroughs were the most striking element of this conflict. OAF, despite its failings, was a technological watershed for air power. There were many firsts: the combat debut of the second generation stealth B-2, the first large-scale operational use of UAVs, the first combat employment of GPS-guided weapons, the introduction of passive defensive devices to defeat enemy radar-guided SAMs, and the first real integration of Joint STARS, UAVs, U-2s, and other ISR platforms in a combat situation. The trends begun in OAF continue to dominate air power employment today. Despite this wealth of technology, the counterland problems of OAF were not easily solved by technology alone.

Enduring Freedom: Innovation in Doctrine

Like ODS and OAF, OEF witnessed much tactical and technological innovation. With most AF combat aircraft based too far from the theater for immediate use, the bulk of early OEF strike missions were performed by B-1s, B-52s, F-15Es, and F/A-18s. AF bomber and F-15E crews did not habitually train for counterland operations and US Navy fighters rarely flew missions integrated with AF assets. Interestingly, although few planners would have chosen these assets to conduct counterland operations in this conflict, what they brought to the fight turned out to be a major reason OEF was so successful. The weapon of choice was the GBU-31 Joint Direct Attack Munition (JDAM). Satellite guided weapons had never before been used to attack fielded forces. Further, "coordinate bombing" using GPS weapons was not generally considered an acceptable means of performing CAS. However, the combination of very accurate

[50] Frostic, 15.

targeting systems possessed by US ground units and the GPS precision of J-series weapons proved very effective against the Taliban Army.[51]

Counterland using JDAMs developed into a powerful innovation during OEF. Strike aircraft, each carrying up to 24 independently targetable 2000 pound weapons, put tremendous firepower delivered with little risk to ground forces in the hands of a single ground controller. A single USAF ETAC and the aircraft he controlled are anecdotally credited with the deaths of over 2300 Taliban infantrymen in one particular battle. Aircrews used many innovative methods to destroy Taliban Army positions. For example, bomber crews targeted the entirety of a long, entrenched position of Taliban infantrymen with only the coordinates of the two ends of the trench. Employed in this manner, multiple JDAMs carried a much more lethal effect than a string of unguided bombs. Other technological innovations, such as GPS-guided cluster bombs, a new generation of "thermobaric" weapons, and piping RQ-1 Predator feeds directly into AC-130 cockpits for targeting, made air power in OEF even more effective.[52]

Despite the heady results from OEF, one caveat is necessary: in Afghanistan counterland was conducted in a very permissive environment. Aircrews flew throughout AOR airspace unthreatened by air defenses, especially when employing at medium and high altitudes. This low threat environment allows activities unthinkable in an environment with a robust tactical air defense. For this reason, among others, OEF should not be considered a model for future CAS

[51] Satellite guided weapons guide to a specific set of coordinates. If the coordinates and the target are coincident, the weapon strikes the target; if the target has moved or the coordinates are incorrect, the weapon misses. Skepticism about "Satellite-guided CAS" is largely due to the ephemeral position of a typical CAS target and the lack of precision associated with targeting apparatus carried by ETACs and Ground FACs. CAS traditionally requires the visual or electronic acquisition of the target by the attacking aircraft, after a general description and position given by the controller.

[52] John Schmitt interview; Major Robert Wintersteen, USAF, 77 Bomb Squadron assistant director of operations and deployed aircrew during the first four months of OEF, Ellsworth AFB, SD, interview by author via email, November 2001; Task Force Enduring Look, unclassified extract.

employment or the basis for completely rewriting existing CAS doctrine. Instead, it should be viewed as an example of what is possible in similar circumstances.[53]

The conditions and political necessities of fighting the Taliban Army in Afghanistan forced Joint and AF leadership to push innovation to its limit. With the region virtually inaccessible to US ground forces initially, with no war plans on the shelf, and with President Bush and other national leaders demanding that operations begin before CENTCOM was really ready, General Tommy Franks and his CENTCOM planners, in conjunction with the Central Intelligence Agency, had to innovate quickly in order to develop a plan that could succeed. The answer was counterland air power combined with effective maneuver. Interestingly, most planners in CENTCOM did not believe decisive results would be achieved quickly – the Karzai government had been installed before Phase III, "decisive operations," had even begun. This was a clear example of doctrinal modification caused rapidly by circumstances, rather than by deliberate design. It also demonstrated the necessity of inculcating US planning methods and doctrine with an inherent adaptability and flexibility in the face of an uncertain future.[54]

When conflicts begin militaries fight with the tactics, technology, and doctrine on hand, and then innovate to find what works best. This is an important point for planners and future military leaders – the next conflict will be conducted differently than can be reliably predicted. Rather than worry about what innovations will be necessary ahead of time, military officers should instead develop an innovative mindset in their everyday thinking. A tremendous amount of time and effort goes into trying to predict and control the future yet no one successfully

[53] JDAMs are actually more accurate when released from higher altitudes. This is because it takes 27 seconds minimum for a JDAM to lock on to the GPS satellites needed for terminal guidance (about 15,000 feet above target elevation is required to insure the 27 seconds). Without this airborne lock-on, JDAMs default to INS guidance and are less accurate. A lack of understanding of how this works led some military officers to believe Satellite CAS in OEF would be less effective since JDAM-carrying attack aircraft did not fly at low altitude. In Satellite-guided CAS, there is an accuracy penalty for employing at lower altitude.

[54] Biddle, 11; Rohde and Onishi.

predicted the developments in operational employment the US military experienced in the last 12 years. This is the paradox of transformation – change and innovation are necessary and desirable but the details are near impossible to predict in advance. The best course of action is to foster and encourage a culture of innovation at all levels of war.

LESSON THREE: THE DOMINANCE OF COUNTERLAND AIR POWER

In the traditional relationship between air and land power against surface forces, air is a form of fires merely enhancing land power's ability to close with and defeat an opponent. The Persian Gulf War appeared to bear this thesis out – despite overwhelming control of the air and over a month of bombing, the final blow was a land offensive supported by air. In OAF, air power alone had great difficulty even targeting ground forces, let alone defeating them, although political objectives were met. But the recent experiences of OEF demonstrate an army can be defeated with air power acting as the dominant combat force provided air operations are fully integrated with the ground scheme of maneuver. If the application of air power is combined with appropriate land maneuver, even when the land force has only limited offensive capability, the outcome can be decisive. This new capability of air power can be relied upon, however, only when an air force possesses sufficient "operational overmatch."

"Overmatch," in a military context, is a term often used when describing the current US advantage over likely adversaries, yet is not defined in joint, US Army, or USAF doctrine. As used in this monograph, "operational overmatch" is the capability to dominate an opponent at the operational level. For air operations, it is more than simply air superiority or even air supremacy, although control of the air is a prerequisite. Operational overmatch requires dominance in technology, tactics, training, communication, and information simultaneously.

When present, operational overmatch allows one side of a conflict to completely dictate the location, tempo, and nature of combat operations. It also allows one side to operate with virtual impunity while attacking the other side's entire system. Qualitatively, one can tell when operational overmatch is achieved when warfare no longer seems "fair" or "humane" to one side (the overmatched side), especially to outside observers.[55]

Michael Ignatieff, Director of the Carr Center for Human Rights Policy at Harvard University, stated the US and its NATO allies are capable of waging "virtual war," where the allied side could achieve its objectives without any NATO casualties. He was also describing the current overmatch of US air power. In ODS, the allied air component possessed operational overmatch everywhere except the area in and around Baghdad. Consequently, allied air operated freely over Kuwait and southern Iraq, overwhelming the Iraqi Army in little more than a month. In OEF, air power was able to operate with virtual impunity, while devastating the Taliban Army and Al-Qaida forces. In OAF and OEF, there were no air component losses to hostile activity. In ODS, losses were minute in comparison to previous conflicts. The dominance of air power is possible only where operational overmatch exists and is exploited. This chapter identifies three key characteristics allowing the USAF to overmatch its adversaries: asymmetry, precision, and persistence.[56]

The Asymmetry of US Airpower

Asymmetry may be defined as "acting, organizing, and thinking differently than opponents in order to maximize one's own advantages, exploit an opponent's weaknesses, attain

[55] Overmatch is not defined in the current version of Joint Publication 1-02, *DOD Dictionary of Military and Associated Terms*, FM 101-5, *Operational Terms and Graphics*, nor AFDD 1-2, *Air Force Glossary*. See Appendix A for a more detailed definition.
[56] Ignatieff, 161.

the initiative, or gain greater freedom of action."[57] US military thinkers are often concerned with asymmetric threats to US forces. Meanwhile, the US military is the most asymmetric force in the world today and US air power is the most asymmetric part of US military power. US air power does things its opponents cannot, brings capabilities no one else possesses to any point on the globe, and simultaneously avoids its own losses. For future counterland, US air power's asymmetry has distinct implications. US air assets can attack an opposing ground unit with little defense and often near-zero probability of the opponent effectively shooting back.[58]

While there are surface to air missile (SAM) systems capable of threatening US air operations, these can be negated with stealth, suppression and destruction of enemy air defenses, or avoiding the threat. Notably, the SAM systems capable of harassing air operations at higher altitudes are just as susceptible to aerial attack as any ground target and are normally targeted early in a conflict to enhance freedom of action. While low altitude air defense assets can never be eliminated, US weapons technology makes this largely irrelevant with a family of precise weapons that actually work better when released from higher altitude.

The asymmetry of US air operations produces many effects on the battlefield – not all are intuitively obvious. First, overmatch makes targeting more effective via air control and ISR superiority. For example during ODS, E-8 Joint STARS aircraft, completely unthreatened by any Iraqi weapon system, proved invaluable in the battle of Al Khafji where,

---

[57] Steven Metz and Douglas V. Johnson II, "Asymmetry and U.S. Military Strategy: Definition, Background, and Strategic Concepts," Strategic Studies Institute, US Army War College, January 2001 [On-line]; available at carlisle-www.army.mil/usassi/ssipubs/ pubs2001/asymetry/asymetry.pdf; Internet; accessed 1 December 2002.

[58] This is not to say threats can be ignored, only that the US air component has been consistently able to avoid significant losses while effectively striking targets. Proof of this assertion is the results from OAF: 78 days of air operations; over 38,000 sorties flown; 8,708 targets attacked; 2 aircraft shot down; 0 casualties. While the Serbian IADS was not the best in the world, it was reasonably capable and functioned to some degree throughout the conflict. Statistical results from OEF are not complete, but to date there have been 0 air component aircraft lost to hostile activity. Department of Defense, *Report to Congress: Kosovo / Operation ALLIED FORCE After-Action Report* (Washington D.C.: Department of Defense, 31 January 2000), 68-69.

> The JSTARS information took on tremendous value, both to evaluate the amount and nature throughout the theater and to track the specific movements of Iraqi forces in southeast Kuwait. The Tactical Air Control Center notes of a conversation between two general officers on 31 January indicate that these officers had originally thought of JSTARS as a "toy" being tried out in the war, but they now saw how vital that capability could be.[59]

It appears neither the Iraqis nor the allies realized how much asymmetry allowed the allies to dominate – a new system like Joint STARS was employed with little risk and added new capability to the joint force though its capabilities were not fully understood. Next, asymmetry allows air units to loiter longer and gain better situational awareness, resulting in better analysis of the enemy situation and better targeting. In OEF, B-1s and B-52s regularly loitered over potential target areas for hours awaiting targets. This form of employment is possible only with no viable surface or air threat, i.e. when operational overmatch is present.[60]

However, one effect of asymmetry is highly underrated. This is the psychological effect when the enemy knows they are at risk of aerial attack at any time and they have no effective response or defense. Consider this observation from ODS:

> It did not take the Iraqis long to recognize that Coalition aircraft were targeting equipment; as soon as precision-guided munitions impacted on equipment near their positions, Iraqi troops moved away from the danger area. As one Iraqi noted to his captors after the war, "The love affair between tank and tankers ended." The result was a direct decrease in maintenance and preparation of equipment for combat. Moreover, precision-guided munition attacks reinforced Iraqi perceptions of an overwhelming American technological superiority.[61]

Only an air force possessing large overmatch derived from asymmetry can cause the types of psychological effects described above.

Retention of this asymmetry is critical to the future effectiveness of air operations. This is a key reason AF leaders are keen to acquire more advanced systems like the F-22 Raptor, F-35

---

[59] *GWAPS, Effects and Effectiveness*, 239.
[60] Major Davin Shing, CENTCOM Combined Air Operations Center planner during Operation Enduring Freedom, interview by author via email, August 2002.

Joint Strike Fighter, and a new family of UAVs. Establishing air supremacy and negating enemy air defenses are the first steps to the asymmetrical application of air power. Once these are achieved, the whole arsenal of air to ground systems can be brought into the fight.

Precision

Even with complete freedom of action over the battlefield, however, air power will not have the desired effects unless its weapons are predictably lethal. If the enemy can hunker down, survive the onslaught, and remain combat effective, air power has less impact. Each successive conflict since the end of the cold war has seen a greater use of precision weapons with a greater percentage of them used in the counterland role. In ODS, the percentage of precision weapons was 9%; in OAF, this increased to 29%; in OEF, it is estimated between 60-70% of the weapons employed so far have been smart weapons.[62]

In ODS, precision weapons had the most obvious influence on the physical combat effectiveness of the Iraqi Army. LGBs used against Iraqi vehicles are credited with the lion's share of equipment kills before the ground phase began. These precision strikes, unexpectedly, also undermined morale as Iraqis recognized allied superiority. Of course, unguided weapons can have a huge impact on enemy readiness and morale as well, especially if their use is relentless. Precise weapons have the double impact of destruction of combat capability by destroying equipment and enemy morale by confirming the futility of resistance. In OEF, once the Taliban Army fully realized US air power was destroying all their equipment with precision strikes and killing them in their trenches and caves, their will to resist broke and they no longer functioned coherently as a fighting force.[63]

---

[61] *GWAPS, Operations*, 321.
[62] Tim Robinson, "Analysis: Afghan air power revolution," *BBC News, Front Page,* 5 March 2002 [Online]; available at http://news.bbc.co.uk/1/hi/world/americas/1855473.stm; Internet; accessed 1 February 2003.
[63] Tanner, 298.

Persistence: The neglected necessity

In OAF, the allies employed high technology weapons using advanced methods, yet the Serbian Army was not defeated with air power. Part of the reason for this is the lack of continuity in the OAF air campaign. Persistence is another characteristic of air operations necessary to overmatch an opponent. Serbian forces quickly learned there were lulls in aerial attack. The VJ and MUP used these periods to move, build decoys, and reorganize in anticipation of the next round of bombing. Under these conditions, it does not matter how much asymmetry air forces possess – the opponent will be able to persevere. If air operations are gradually increased or their application is uneven, US air overmatch becomes less important.[64]

For soldiers and marines, persistence is obvious. If an operation contains lulls allowing the enemy to rest, reorganize, and resupply, the initiative and potentially victory can be lost. Armies are by nature complex, adaptive systems and they will regroup quickly if allowed respite from attack. Airmen, accustomed to managing schedules for sustained operations, sometimes do not understand the importance of persistence at the decisive point of an operation. Air planners traditionally view their role in counterland as providing a steady supply of air assets for the land commander to use instead of being the dominant component in the land battle. In order for air power to be most effective against a ground force, air planners must understand the importance of persistent aerial attack at the decisive time and place, determined either by the land force commander on-scene, or by analysis of reliable intelligence. Schedules and Air Tasking Orders (ATOs) must be adaptable to changing situations on the ground on short notice. Weapons and

[64] Hosmer, 31-33. Hosmer's example in this reference is the "Rolling Thunder" campaign in Vietnam. Hosmer states: "The bombing effects were also attenuated by frequent bombing pauses or cutbacks instituted to promote various U.S. peace initiatives. These pauses and changes in bombing lines seriously diminished the impact of the Rolling Thunder air campaign by providing the North Vietnamese with respites to repair damaged bridges and LOCs and to reposition war supplies closer to South Vietnam." The US and NATO made the same basic miscalculation in OAF.

aircraft capable of employing in adverse weather conditions are required. Precision weapons must be retargetable and available in large quantities around the clock. Finally, aircrews and air planners must have intimate knowledge of the ground scheme of maneuver, the land component's plan and timing, and where air operations fit in. This requires truly joint thinking and planning.

To fully realize the dominance of counterland air power, air operations must be precise and persistent, while taking full advantage of air power's inherent asymmetry over land forces. However, for this to happen, the US air component operational overmatch must be fully exploited. Meanwhile, it is important to stop and consider what air power cannot do at present and what can be learned from its limitations.

LESSON FOUR: THE LIMITS OF COUNTERLAND AIR POWER

The analysis so far has noted mostly air power's strengths. Like any instrument of military force, counterland air power has many limitations. Traditionally, the limitations of counterland are the reason air power could only be relied upon as fire support. In the future, counterland's main limitations must be compensated for or eliminated. This lesson identifies physical limits of counterland in the three conflicts considered. The limitations discussed in this section are limits of conditions, limits of lethality, and limits of information.

Limits of Conditions

The weather and environment affect air operations, often limiting what the air component can do. This may seem like a blinding statement of the obvious, but without all-weather, all-condition capability, counterland has only restricted applicability to the land fight. Until very recently, reliable counterland was impossible without visual conditions over a desired target area.

For this reason, during US Army training exercises, such as Battle Command Training Program (BCTP) Warfighters, it is normal for the administrators to "weather out" available CAS at various times, intending to give the ground commanders and staff a more difficult tactical situation based on real world conditions. If counterland had not changed between ODS and the present, this would be the end of the statement about conditions. However, advances in tactics and technology have eliminated many of the constraints caused by conditions.

The last decade has witnessed an explosion of new technology allowing effective, all-weather counterland. Many all-weather weapons rely on GPS for their terminal guidance, but GPS is not the only solution. Area weapons, usually unguided, still have applicability, especially to cut off escape routes or force movement. Unguided weapons can be safely employed through the weather in an INT role. Additionally, a new generation of weapons using GPS guidance up to a point (i.e. through the weather) and then rely on other precise forms of terminal guidance are being fielded. Finally, the AF and industry are developing new LGBs whose seekers can "see" through clouds. The traditional weather restrictions for counterland are quickly slipping away.[65]

Lagging these advances, but also progressing, are procedures and rules of engagement (ROE) to go with the all-weather capabilities. The joint force already has all-weather CAS procedures and ROE. However, this guidance is still quite restrictive and does not fully integrate new, all-weather counterland capabilities. It takes time for CAS doctrine to catch up with technology and with good reason – rushing to employ CAS in a new way can be catastrophic unless it is well thought-out and tested. Until the lessons from OEF and implications of

[65] All-weather weapons already fielded include the GBU-30 series Joint Direct Attack Munition (JDAM), the CBU-103 Combined Effects Munition (CEM) with Wind Corrected Munition Dispenser (WCMD), the CBU-104 Gator Minefield with WCMD, and the CBU-105 Sensor Fuzed Weapon with WCMD. JDAM and WCMD were used successfully in a counterland role during OEF. Being fielded is the "enhanced Paveway" LGB which uses GPS for midcourse or terminal guidance along with on-demand laser guidance. In development are several weapons featuring "automatic target recognition" in the terminal mode, a capability specifically suited to attacking mobile targets and unhampered by all but the worst weather conditions.

technological advances are fully understood and new procedures are developed, counterland air power may not be employable in the worst conditions.[66]

Limits of Lethality: Attrition versus Effects

Until the 1990s, US air power was tied into an attrition-based paradigm. Counterland air power, by doctrine and practice, still is. When CENTCOM gave the air component its counterland objective in ODS, it was based on a raw percentage of Iraqi combat power to be reduced, expressed in numbers of tanks, artillery tubes, and personnel. Ironically, although air power failed to reach CENTCOM's goals, the Iraqi Army was effectively reduced by far more than 50%. Effects-based thinking now dominates the AF but attrition-based terminology and approaches remain prevalent in counterland.[67]

When a member of a US Army maneuver branch reads about effects-based operations, the usual response is "this is not a new idea." Maneuver warfare by the land component has incorporated effects-based thinking for decades, without calling it EBO. US Army tactical tasks are effects-based – e.g. defeat, destroy, interdict, neutralize – all indicate the desired effects and have specific doctrinal meanings. But when fire support missions are given to the air component, the desired effects are rarely included. This is because land maneuver units often view fires as a way of helping *them* to accomplish their tactical task – "it's just support."[68]

For CAS and INT to be most effective, however, the desired effects of an attack need to be considered. If a ground controller tells an aircrew to "kill 5 tanks," five tanks may be destroyed but the desired effect (e.g. stop that tank company from moving in this direction) may

[66] Department of Defense, *Joint Pub 3-09.3, Joint Tactics, Techniques, and Procedures for Close Air Support (CAS),* (1 December 1995), IV-15 – IV-21. This publication is in rewrite and is due to be released soon. The new version has more flexible procedures, allowing better night/adverse weather employment.
[67] As shown earlier, over 50% of the Iraqi Army either deserted or surrendered immediately. Clearly, a land force under aerial attack can cease to function effectively long before a huge percentage of its equipment is attrited. The joint force needs better ways to measure and account for this.
[68] Even though, with some irony, fire control cells are now called effects cells.

not be achieved. On the other hand, in the time-constrained and often confused CAS environment, giving an aircrew a generic effect to achieve will not work either. For effects-based counterland to be possible, a mutual understanding between ground and air forces of the land objectives and scheme of maneuver is needed, from the operational through the tactical level. The only viable means to obtain joint understanding is through a great deal of integrated training and fully standardized, joint counterland procedures. At present, the training and procedures are not in place and counterland air power remains attrition-based.

Limits of Information

Phillip Meilinger said in his *Ten Propositions Regarding Airpower:* "In essence, airpower is targeting, targeting is intelligence, and intelligence is analyzing the effects of air operations."[69] These three elements – targeting, intelligence, and analyzing effects – represent another potential limit of counterland air power: a limit of information. The air component cannot effectively perform a "movement to contact." If detailed intelligence about the battlefield is not known beforehand, air power becomes far less effective and is reduced to the air arm of a land commander's fire support cell. Likewise, if the effects of an aerial attack cannot be accurately assessed, counterland is unreliable. This section briefly examines battlefield intelligence and bomb damage assessment (BDA) and their impact on counterland operations.

Major Phil M. Haun provided a detailed description of the intelligence requirements of effective counterland in his Air Command and Staff College monograph "Air Power Versus a Fielded Army: A Construct for Air Operations in the 21st Century." Haun's solution to the problem of battlefield intelligence is for the CAOC to develop the infrastructure and procedures for accurate and timely battlefield intelligence using national assets, tactical reconnaissance, and

[69] Phillip Meilinger, "Ten Propositions Regarding Air Power," *Airpower Journal* (Spring 1996) [Journal On-line], available at http://www.airpower.maxwell.af.mil/airchronicles/apj/meil.pdf, Internet, accessed 18 February 2003.

other intelligence sources. While Maj Haun and others correctly identified the need for better intelligence and procedures, this solves only part of the problem. Understanding the desired effects of a given strike is just as important as knowing where the target is and how best to attack it. Of course, the assets identified to provide better prestrike intelligence may also be used most of the time for BDA. Correctly understanding if an attack had the desired effects is critical for successful counterland. Additionally, the impact of air operations with respect to the ground scheme of maneuver must also be understood.[70]

Not knowing if bombing enemy troops with air assets is effective is a microcosm of the larger, generic problem of how to get and use accurate BDA. In ODS, arcane methods by ARCENT for determining BDA during the air-only portion of the campaign greatly underestimated the amount of damage being suffered by the Iraqis. In OAF, AF BDA analysts vastly overestimated the number of Serbian Army vehicles damaged or destroyed, exacerbated by clever camouflage and deception efforts by the VJ. The presence of US ground personnel on scene in OEF greatly enhanced the accuracy of BDA, yet in some cases US ground troops had to physically examine a targeted position to completely determine the effects. These examples point out the difficulty of "knowing when you have won" using air power in a counterland role.[71]

Understanding the current limits of counterland air power is necessary for future counterland to reach its potential. Once known, the limits can methodically be overcome with better technology, procedures, and training. Only then will the large, operational overmatch US air forces possess, combined with superior ISR and a culture of innovation, be able to dominate future battlefields.

---

[70] Haun, 25-31.

[71] In ODS, ARCENT allowed "credit" for damage to particular USAF aircraft based on arbitrary percentages. A-10s got $^{1}/_{3}$ credit and F-111s got ½ credit for each kill claimed. Other aircraft got no credit. *GWAPS, Effects and Effectiveness*, 209.

CHAPTER FOUR

CONCLUSIONS AND RECOMMENDATIONS

"It must be remembered that there is nothing more difficult to plan, more doubtful of success nor more dangerous to manage than the creation of a new system. For the initiator has the enmity of all who profit by the preservation of the old institution and merely lukewarm defenders in those who would gain by the new one."

Niccolo Machiavelli

Review

This study identified the common counterland lessons from the three main conflicts the US participated in since the end of the Cold War. It reviewed the three conflicts from a counterland perspective and outlined the effects of counterland operations, both physical and psychological. After this review, it identified four salient, common lessons from these conflicts. These lessons were contrasted against the disparate operational environments experienced. This work made other observations about the development of counterland operations, within the framework of the joint campaign.

The common lessons from these conflicts must be taken into account to accurately determine what the future of counterland holds. First and most obvious, the three conflicts prove the necessity of having effective ISR. More specifically, effective counterland requires target information coming from multiple sources – visual information from land units cannot be neglected as technology continues to advance. Secondly, innovation, both during and between major combat operations, is necessary to fully realize the potential of tactics, technology, and doctrine. An active culture of innovation is required for new solutions to flourish. Next, US air power possesses a level of operational overmatch over many of the world's military forces – both land and air – and can therefore achieve results never before possible. Finally, air power is still limited by several factors, serving to mute its potential. It appears, however, that the major

limits on air operations in a counterland role can be overcome with advances in technology, tactics, and doctrine. These lessons considered alone are valuable; however, it is important to understand the implications of these lessons for the future of counterland operations.

Implication: A different view of fires

Traditionally, counterland air power and CAS in particular is viewed as form of supporting fires used by the land commander when and where he deems appropriate, often as a "band-aid" when the close fight is not going well. In other cases, as shown in ODS and current warfighting exercises with heavy divisions, once the ground campaign begins CAS is really a luxury, reducing friendly casualties and making victory more total, but not absolutely required for success. This view is still valid in many circumstances, particularly in large-scale employment of US heavy forces, but the experiences of the three conflicts in this monograph suggest a new relationship between land and air power. In this new relationship, air power, supported by ground units for targeting, terminal control, and BDA, is an integral part of the ground scheme of maneuver that cannot simply be lumped together with other joint fires. In other words, the land commander relies upon precise, lethal air-delivered fires to control the entire battlefield. Without counterland, the land commander may not be able to succeed at all. This was the case in OEF-Afghanistan.[72]

In OEF, there was nothing about the AMF indicating it would be able to defeat the Taliban Army after over five years of stagnated conflict. However, with air power added to the equation, the AMF/SOF force was able to dominate the battlefield and utterly defeat the Taliban Army in only a few weeks. This shows with no doubt the importance of modern US air power in land warfare, at least in like circumstances. When the US employs large-scale heavy ground forces, the old mental model can still be valid – CAS is support and the US can win even if no air

assets fly. However, when using proxy armies, light US ground forces, or heavily outnumbered heavy forces, counterland air power is required to prevail. As noted earlier, situations like this are likely to be common, even within the construct of a major land campaign using heavy land forces. Full spectrum, distributed operations will yield many situations where US or allied ground units cannot be victorious without precise, persistent counterland air power. Lt Gen David Deptula, Director of Plans and Programs for USAF Air Combat Command, effects-based advocate, and the principal planner for the air campaign in ODS, argues that these conditions are actually preferable to deploying large heavy formations in many situations.[73]

The symbiotic relationship between land and counterland air power is not automatic. It relies upon standardized, joint planning and procedures, fully integrated ISR and communication networks, and habitual training relationships between the air and land component. The US joint force must continue its efforts towards a full integrated, compatible information network passing information readily across service and component lines. Disconnected, service-centric networks or systems are no longer acceptable. All available sources of ISR information must be exploited and integrated. The experiences of OEF fully demonstrated that ISR provided by ground units proved just as valuable as airborne ISR sources – this source of ISR information must continue to be integrated into existing C^4ISR infrastructure. Finally, the air component must accept its responsibility to the land campaign when required to provide dominating fires and enable the land component to defeat its opponents.

Implication: Effects based Counterland

Lessons from the three conflicts demonstrate the cumulative effects, both physical and psychological, of air attacks on surface forces must be understood for the best employment of air

---

[72] *GWAPS, Summary Report*, 111.
[73] Deptula, 18-19.

power. Using an attritional approach is often misleading. In ODS, overall attrition goals for the air component were not met, yet the overall effects on the Iraqi Army appear to have been greater than the numbers indicated. In OAF, the direct effects of the air campaign on the Serbian Army were much less than believed at the time. In other words, the numbers of vehicles destroyed does not accurately reflect the real effects air power is having upon a land force.

The air component must adopt a different attitude about attacking ground forces. Instead of measuring effectiveness in attritional terms, the AF must apply an effects-based approach to counterland in a similar way it applies effects-based thinking to other air component roles. Despite the dominance of effects-based thinking among AF leadership, when it comes to targeting, crews still think in terms of probability of damage to specific targets rather than the bigger picture effects on the battlefield. "The measure of merit is no longer the number of enemy killed and vehicles destroyed but *operational* results obtained by all force elements synergistically combined."[74] Effects-based counterland dovetails nicely into the new view of fires discussed earlier: "massing surface forces to overwhelm an enemy is no longer an absolute prerequisite to impose control over the enemy."[75] With lighter land forces executing distributed operations in the transformed future, applying effects-based thinking to counterland is not only a good idea, but will be required for successful control of the future battlefield.[76]

Implication: A new balance of air and land power

There is little doubt US air power can dominate most likely opponents now and into the near future. The US military is arguably the most asymmetrical combat force in history and the

[74] Martin van Creveld, with Steven L. Canby and Kenneth S. Browner, *Air Power and Maneuver Warfare* (Maxwell AFB, AL: Air University Press, July 1994), 204. Author's italics.
[75] Deptula, 18.
[76] Probability of damage (P_d) is a statistical measure of a particular weapon's effectiveness against a particular target. While P_d is a measurement of effects, it does not account in any way for the impact of an attack on the battlefield situation. This is the difference between tactical counterland procedures and the operational thinking required.

air component, considered in aggregate, is the most asymmetrical part of the US military. This does not mean that air can expect to defeat a land adversary without an effective land force. OAF demonstrated this fact for any who may have believed otherwise. The evidence suggests, however, that a threshold has been crossed. As the authors of the Gulf War Air Power Survey predicted, "If air power again exerts similar dominance over opposing ground forces, the conclusion will be inescapable that some threshold in the relationship between air and ground forces was first crossed in Desert Storm."[77] Air power did again exert similar dominance over opposing ground forces in OEF. But what is the nature of this threshold and what does it really mean? It is easiest to understand the implications of air power's dominance in terms of warfighting functions – specifically, land maneuver and joint fires.

In the traditional US Army view of land maneuver and fires, land forces use effective fires to enable maneuver forces to gain a positional advantage over the enemy. This positional advantage is then exploited to close with and destroy the enemy. ODS is an example of this view: air power's fires degraded the Iraqi Army so that land power could perform its "left hook" maneuver and roll up the Iraqi defenses. This traditional view still works well if the land force possesses sufficient offensive combat power to prevail in the close fight.[78]

However, if the land force in question is facing an opponent with some aspects of offensive superiority, the maneuver to the close fight can be a disaster. Imagine a Stryker Brigade Combat Team with light armored vehicles facing a maneuver force with even small numbers of T-90 tanks. If the heavier opponent can retain organizational cohesion and some semblance of situational awareness while being attacked, the opponent may be able to close with

[77] *GWAPS, Summary Report*, 246-247.
[78] Department of the Army, *FM 3-0, Operations* (June 2001), 4-4 – 4-5; The US Marine Corps uses a different definition of maneuver, emphasizing creating conditions with which an enemy cannot cope and allowing that the

a lighter unit and prevail or at least exact heavy damage. A new way of thinking about land maneuver and fires can solve this problem.

US operational and tactical fires have advanced to the point where they are capable, in certain situations, of decisive effects on enemy surface forces. The source of this capability is operational overmatch provided by air supremacy and the increasing precision and lethality of modern weapons. However, there are at least two requirements for counterland to be able to produce these effects: maneuver by friendly ground forces and ISR superiority. Land maneuver forces, in this scenario, maneuver to force the enemy surface forces to either remain where they are or move to counter the land force activity. In either case, land maneuver makes enemy action predictable and enemy positions known and therefore makes enemy units susceptible to aerial attack.

In OEF, the Taliban Army, faced with AMF/SOF maneuver, could either stay in their entrenchments and have their position identified by ground units or move to counter AMF/SOF maneuver and therefore be identified by other ISR assets. Either way, air power could then target them and destroy their combat vehicles and fighting positions. In conjunction with counterland air power, AMF/SOF forces then moved to Taliban Army positions and defeated the disrupted enemy. Air power created the advantage friendly forces needed to dominate.

ISR superiority is the other crucial requirement. It is not enough to have air supremacy and superior weapons – an information gap created by ISR superiority is also required to fully exploit these advantages. In ODS, the allies possessed unquestioned ISR superiority: CENTCOM had detailed information on Iraqi positions while the Iraqis could not even detect a Corps-sized movement across open desert. In OEF, ISR superiority was even more marked, with

---

advantage created may be psychological, technological, or temporal as well as positional. *MCDP 1-0, Marine Corps Operations* (September 2001), 6-2 – 6-3.

technological advances allowing allied land and air forces to dominate the battlefield while the Taliban Army waited in trenches with little awareness of what would happen to them. However, in OAF allied information was often unreliable and despite a huge advantage in technology and a relatively small geographical area of operations, Serbian forces were able to hide their activities and consistently deceive the allies. The difference was the lack of the land maneuver piece. Without the cooperation of friendly ground forces, US dominance was muted. There is little to suggest a future single-component approach would be more likely to succeed. These implications all suggest a new way of thinking about and conducting combat operations against a land opponent. The following recommendations address changes in planning, training, and doctrine needed for the joint force to be able to conduct land warfare in this new mental model.

Recommendation: Joint Planning

The first recommended action is already occurring in its infancy – what the Joint Staff calls "Joint Expeditionary Warfare" – described as "fully integrated joint force warfighting capabilities exploited to shape or shatter any potential adversary's political and military cohesion, will, and capacity for resistance through the conduct of multiple, parallel and distributed operations across the range of military operations."[79] One capability to exploit is air power's dominance over land forces, properly combined with maneuver and ISR superiority. Truly joint planning and execution are necessary for fully integrated force warfighting capabilities to be anything other than a series of buzzwords. Counterland missions reveal this quite readily.

In order for counterland to effective, it must be directly synchronized with the JFC's operational scheme of maneuver and fully integrated with the land component's plan. The

[79] Directorate for Operational Plans and Joint Force Deployment, *An Evolving Joint Perspective: US Joint Warfare and Crisis Resolution In the 21st*, 21.

CAOC and Army Corps and Division staffs must be planning the same campaign. There are no easy answers to the problem of joint planning with disparate staffs. Simply put, the division of components into air, land, maritime, etc. is becoming blurrier in modern war, yet the services are still organized and equipped along service component lines. Counterland missions are often the point where the lack of joint integration and synchronization becomes quite visible. An example from OEF illustrates this point.

In Operation ANACONDA, planners in CENTCOM's CAOC did not know many of the details of the land component's plan until the day before execution. The reasons for this are still murky but it appears that either the 10th Mountain Division planners did not think they needed much CAS, they were concerned about operational security and therefore did not want to release the details, or they assumed the AF would be able to provide whatever CAS became necessary. The truth is probably a combination of the three plus other factors. Regardless, when the AMF Main Effort turned around under fire, members of the 10th Mountain and 101st Air Assault Divisions found themselves in a fierce fight with Al-Qaida and CAS requests went up through the net in great volume. The AF was unable to provide the support required initially because the CAOC had not been able to plan for this situation. Further,

> The ABCCC aircraft system was slated for retirement and was not deployed to the theater. Without ABCCC to sort through the CAS requests and prioritize the missions of strike aircraft, the job was even tougher. Officers flying in E-3 Airborne Warning and Control System aircraft and working from the Combined Air Operations Center struggled to sort out dozens of urgent requests from troops under fire.[80]

[80] Ibid.

There were also hundreds of complex fire control measures in place and the battlefield was in a remote portion of Afghanistan several hours from most friendly airfields. The most important sequences in the operation were conducted ad hoc.[81]

For the US military to stumble into an operation with such a minute amount of preplanned joint coordination and synchronization is inexcusable. Frankly, if it were not for the high measure of competence among the soldiers on the ground and the very large degree of overmatch possessed by air component assets, in addition to the abject courage of both soldiers and aircrews, ANACONDA might have been a tragic failure. Planning and coordination were simply incomplete. Despite this, the most outspoken criticism of the operation faulted procedures and weapons selection rather than planning. Integrated joint planning and joint thinking are imperative for the success of future US military operations.[82]

Recommendation: Joint Training

The ability to plan and execute a truly joint campaign is only possible when habitual training relationships exist among the joint forces. The US Marine Corps is a good example of habitual relationships yielding truly joint warfighting. Since the bulk of land warfare is conducted by the US Army and USAF, cross-service training must be a priority for the services in order to realize the full potential of future counterland. Finding the time for additional training will be difficult within the current operational environment. There is little extra time and resources available to devote to joint training. Yet, recent experiences in Afghanistan prove how vital this type of training is for successful combat in the future.

---

[81] Davin Shing interview; Rebecca Grant, "The Clash About CAS," *Air Force: Journal of the Air Force Association,* January 2003 [Online]; available at http://www.afa.org/magazine/Jan2003/0103cas.asp; Internet; accessed 12 February 2003.
[82] McElroy, 7.

A straightforward solution to this training requirement is to develop relationships between existing Air Expeditionary Forces (AEF) with existing US Army Corps or Divisions. AEFs, made up of AF squadrons operating on coordinated training and deployment schedules, could then integrate their training plans with US Army training schedules, and vice versa. An example of integrated training is to merge AEF training events, such as Red Flags, with Army training, such as NTC rotations. The result would be a much greater cross-service understanding of missions and procedures. Of course, there are costs for such a synergistic approach to training – neither service would get exactly what it wanted out of its training – but the payoff would greatly exceed such costs. Note this relationship would be for training purposes only – there would be no need to coordinate specific deployment schedules since it is impossible to predict which AEF, Corps, Division, or combination would be deployed for some future operation. However, Joint Chiefs of Staff (JCS) oversight and a real commitment from Joint Forces Command will be required to insure the planned relationships have priority.[83]

Recommendation: Joint Doctrine

Both US Army and US Marine Corps doctrine define and address land maneuver warfare and the relationship between fires and maneuver at the operational and tactical level. Joint doctrine discusses operational maneuver, interdiction, and fires and their interrelationships. AF doctrine, as mentioned before, defines and addresses CAS and INT under the counterland umbrella. All of these documents contain coherent, logical discussions about the relationship between maneuver and fires – yet something is missing. As Martin van Creveld points out: "The question that commanders should ask themselves is, What can air do that no *other* arm can do

[83] For example, while squadrons are deployed to Nellis AFB for Red Flag, specific air to ground formations could make trips to NTC for coordinated counterland activities with a deployed Army Brigade. This can be in conjunction with existing Air Warrior I training. The benefits of such integrated training go well beyond "only" coordinated counterland and land force operations.

that will have a *decisive* effect on the outcome of the ground battle?"[84] Air power is not just another form of fire support on the modern battlefield. It has unique, asymmetric capabilities that should be exploited. Van Creveld's answer to his own question was limited to traditional ground maneuver situations: he suggested air could protect the flanks of penetrating maneuver forces from counterattack and protect against encirclements. However, the important point is the question being asked – what can air power uniquely do to effect the modern battlefield?[85]

It is beyond the scope of this work to attempt to answer this question adequately. Unfortunately, current Joint and Service doctrine does not answer it either. Needed is a unified, fully-updated joint doctrine of maneuver warfare. "Joint Maneuver Warfare Doctrine" should incorporate the experiences of the past with the emerging realities of 21st century combat scenarios. It should be neither air-centric nor ground-centric, but instead be a truly joint concept that seeks to exploit the best capabilities of all warfighting functions. I suggest Marine Corps doctrine is a good starting place since Marine thinking is dominated neither by airmen nor soldiers – they are forced to include viewpoints across the spectrum due to their organization. From this suggested capstone doctrine would flow the concepts behind supporting doctrine, including updated Joint Fires and Joint CAS Doctrine. Without the unifying principles of Joint Doctrine, counterland procedures have a tendency to become ad hoc, as happened in OEF. This is not a good development and can lead to interservice strife and, worst of all, fratricide.[86]

Summary

These implications and recommendations are summarized as follows. Future land combat operations must be jointly planned. The existing staff infrastructure is adequate but

[84] Van Creveld, 205 -206. Author's italics.
[85] *FM 3-0,* 4-7; *Joint Publication 3-0, Doctrine for Joint Operations* (10 September 2001), IV-13 – IV-17; *Joint Pub 3-09, Doctrine for Joint Fire Support* (12 May 1998), 1-6 – 1-7.

habitual planning relationships need to be developed between the CAOC and land component staffs. The components must dispense with service- or component-centric viewpoints and embrace joint expeditionary warfare. Counterland integration with land component maneuver must be trained into the force. This training must be regular, standardized, and required. A way to do this is merge parts of existing AEF and Division/Corps training events. Joint Maneuver Warfare doctrine should be developed to reflect the new balance of air and land warfare. The concepts behind this doctrine already exist in disparate documents but there is no unifying, capstone publication defining this emerging form of warfare.

Future Counterland

It is difficult to predict the nature of future war with any fidelity. Despite this, several salient characteristics of future counterland are probable. First, it seems likely the Joint Force will continue to call upon air power to provide significant, if not decisive, effects in future land combat. As the land component transforms into a lighter, more deployable force, the need for air-delivered interdiction and fires will be more pressing than for the current heavy force. Second, as warfighting becomes more joint, counterland operations will need to be more fully integrated into the JFC's and land commander's scheme of maneuver. The counterland fight must be fully integrated and joint. Finally, as other nations and entities become less likely to engage US forces in open combat, counterland will become more difficult. Limited access, full-spectrum, distributed operations on a non-contiguous, non-linear battlefield appear to be the state of warfare into the near future. There may not be any tanks to "plink" or entrenchments to "carpet bomb" in the future; hostile individuals may need to be targeted to the last man. The only viable means to employ counterland air power in this environment is exploiting air power's

[86] One of the reasons the JCAS publication has been in revision for so long is the capstone operations doctrine documents for the three services involved – Air Force, Army, Marines – are not in conceptual agreement.

dominance, information superiority, and a spirit of innovation to engage in counterland operations fully integrated with ground units providing symbiotic effects.

APPENDIX A

TERMS AND DEFINITIONS.

To the greatest extent possible, this monograph uses established joint terminology. However, not all the pertinent terms are defined in joint doctrine. Others are unfamiliar or misunderstood, even if they exist in joint doctrine. Yet others have multiple meanings within Joint Doctrine.

Definitions.

Air Interdiction (INT). Referred to simply as "Interdiction" in AF doctrine, this term is defined as "air operations conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required." AF doctrine states Interdiction missions can support ground forces, or be supported by ground forces. AF doctrine also refers to Interdiction as a form of operational maneuver. Joint Doctrine appears to support this view.[87]

Asymmetry. Not defined in joint doctrine. Asymmetry is the ability and willingness to act, organize, and think differently than opponents to maximize advantages and exploit weaknesses. Air forces attacking ground forces is perhaps the most stark example of an asymmetrical military application. In particular situations, asymmetry allows air assets to destroy ground forces with impunity. Asymmetry is what has allowed US air power to dominate current military operations.[88]

Close Air Support (CAS). "Air action by fixed- and rotary-wing aircraft against hostile targets that are in close proximity to friendly forces and that require detailed integration of each

[87] Joint Pub 1-02, 21; AFDD 1, 48.
[88] Metz and Johnson.

air mission with the fire and movement of those forces."[89] The difference between CAS and INT, according to both joint and AF doctrine is proximity to friendly forces and the need for detailed integration. The term "CAS" unfortunately subjugates all air-delivered fires to mere support in some people's minds. There is a gap in this definition where counterland is technically CAS in terms of proximity and integration, but where air is supported by ground forces instead of the reverse. I suggest the term "Supported Air Interdiction."

Counterland. This term, not found in joint doctrine, is an AF function conducted to attain and maintain a desired degree of superiority over surface operations by the destruction or neutralization of enemy surface forces. Counterland is subdivided into the more familiar missions, Interdiction (INT or AI) and Close Air Support (CAS). The coining of this term appears to be an effort by the Air Force to standardize its mission sets: Counterair, Counterspace, Counterland, etc. This term in used throughout this monograph instead of the unwieldy "CAS and INT."[90]

Decisive. Not defined in joint doctrine, although used liberally in describing other terms. "Having the power to settle a dispute; conclusive."[91]

Decisive Operation. "Those that directly accomplish the task assigned by the higher headquarters. Decisive operations conclusively determine the outcome of major operations, battles, and engagements."[92] Joint doctrine does not define the decisive operation but points out that "any dimension of combat power can be dominant – and even decisive – in certain aspects

[89] Joint Pub 1-02, 90.
[90] Air Force Doctrine Document 1, 48.
[91] *The American Heritage Dictionary of the English Language* (Boston: Houghton Mifflin Company, 1976), 342.
[92] *US Army FM 3-0, Operations*, 4-23

of an operation or phase of a campaign, and each force can support or be supported by other forces."[93]

Distributed Operations. Not defined in joint doctrine. "Operations conducted from dispersed locations across time and space to achieve the effects desired." For ground operations, distributed operations are those where forces are not concentrated or massed in a particular geographic area (note: all air operations are by definition distributed). Implied in this definition is that distributed ground forces may not be able to support each other with direct or indirect fires. The ability to conduct effective distributed operations allows a force to be decisive in multiple parts of a battlefield/theater at the same time.[94]

Effects Based Operations (EBO). Not defined in joint doctrine. EBO are "actions taken against enemy systems designed to achieve distinctive effects that contribute directly to desired military and political outcomes." Ultimately, all military operations are effects-based, but EBO frees military planners from traditional attritional approaches and encourages systems thinking and innovation. EBO is often closely associated with parallel warfare.[95]

Maneuver, Maneuver Warfare.

1. Army and Joint definition: **"**Employment of forces in the battlespace through movement in combination with fires to achieve a position of advantage in respect to the enemy in order to accomplish the mission." Army doctrine goes on to describe tactical maneuver as positioning of forces to close with and destroy the enemy. Therefore, in Army doctrine maneuver warfare's objective is primarily positional advantage for the close fight.[96]

---

[93] *Joint Pub 3-0, Operations,* III-10.
[94] Directorate for Operational Plans and Joint Force Deployment, *An Evolving Joint Perspective: US Joint Warfare and Crisis Resolution In the 21st Century* (Washington, D.C.: Department of Defense, 28 January 2003), 18.
[95] *Air Force Doctrine Document 1-2, Air Force Glossary* (9 July 1999); Edward C. Mann III, Gary Endersby, and Thomas Searle, *Thinking Effects: Effects-Based Methodology for Joint Operations* (Maxwell AFB, AL: Air University Press, October 2002).
[96] *Joint Pub 1-02,* 314; *FM 3-0,* 4-4 (adds term "fire potential").

2. US Marine Corps definition: "A warfighting philosophy that seeks to shatter the enemy's cohesion through a variety of rapid, focused, and unexpected actions which create a turbulent and rapidly deteriorating situation with which the enemy cannot cope…The essence of maneuver is taking action to generate and exploit some kind of advantage over the enemy as a means of accomplishing his objectives as effectively as possible. That advantage may be psychological, technological or temporal as well as spatial." The Marine definition is more sophisticated in its inclusion of other types of advantage besides positional. This nuance has large implications for future warfare.[97]

Operational Overmatch. Not defined in joint doctrine. The ability to dominate an opponent at the operational level. Operational overmatch requires dominance in technology, tactics, training, communication, and information.

Overmatch. Not defined in joint doctrine. Overmatch is the advantage in combat capabilities over current or potential opponents. Overmatch usually refers to technological advantages. For a direct fire weapon system, overmatch may be the ability to effectively engage at greater range than an opponent system. Other capabilities provided by training, doctrine, or information may also provide overmatch. For example, the German Army overmatched the French Army in 1940 even though, technologically, French tanks were as good as or better than most German tanks – overmatch in this case was derived from doctrine and training superiority, not simply technology.

Weapons Systems, Munitions, and Counterland Assets.

A-10. The only aircraft in the USAF designed specifically for support of ground forces. The Warthog (official name: Thunderbolt II) carries a wide variety of weapons and, due to its excellent maneuverability at low speeds, survivability, and long loiter times, is ideal for CAS.

[97] *MCDP 1-0, Marine Corps Operations*, 6-2.

AC-130. A modified transport aircraft with an impressive weapons suite. It incorporates side-firing weapons integrated with sophisticated sensor, navigation and fire control systems. The AC-130 is used almost exclusively for counterland, although it is not restricted to this mission.

EC-130E Commando Solo. A specially modified C-130 supporting Psychological Operations (PSYOPS) with radio, television, and other forms of broadcast designed for specific groups. It also performs civil affairs broadcasts.

Enlisted Tactical Air Controller (ETAC – aka Joint Tactical Air Controller, or JTAC). Specially trained personnel, usually in the AF, who accompany ground units and communicate with and control air assets in conjunction with land component activities. TACs are the only personnel, other than FACs, with US Army ground forces qualified for "final control" of aircraft during CAS missions.

Forward Air Controller (FAC); Airborne (AFAC); Ground (GFAC). An officer (aviator/pilot) member of the tactical air control party who, from a forward ground or airborne position, controls aircraft in close air support of ground troops. A FAC must be a qualified pilot or navigator specially trained for terminal control of CAS.[98]

GBU-31. The 2000 pound variety of the JDAM series of weapons. It comes in two versions: Version 1, with a Mk-84 general purpose bomb body; and Version 3, with a BLU-109 penetrator bomb body. A B-1 or B-2 can carry up to 24 GBU-31s while fighter aircraft are normally configured with 2 or 4 weapons each.

Joint Direct Attack Munition (JDAM). A conventional weapon with a special tailkit and strakes. The tailkit contains the guidance system, which is a simple inertial navigation system with GPS aiding. With GPS, accuracy is nominally 13 meters. Without GPS, accuracy is

nominally 30 meters. Accuracy includes what is called "target location error" or TLE, which is a measure of how accurate the known coordinates for a target will be. If TLE is smaller than average, then accuracy is better. JDAMs have some standoff capability, but are fundamentally direct attack weapons, meaning the launching aircraft must fly relatively close to its target. JDAMs currently come in 2000 pound (GBU-31) and 1000 pound (GBU-32) versions. A 500 pound version is about to be fielded.

Joint STARS (E-8 airframe). A long-range, airborne target identification system with a very good synthetic aperture radar (SAR) capable of near-photo quality radar images. It performs airborne battle management and command and control (C2) functions for air to ground missions.

Killer Scout. An aircraft that flies ahead of strikers and validates assigned targets and finds other lucrative targets within a relatively sanitized chuck of battlespace. The Killer Scout provides only indirect control and deconfliction and is therefore only usable in INT. A true FAC or ETAC is required for terminal control.

Laser Guided Weapon (a.k.a. Laser Guided Bomb or LGB). A weapon which uses a seeker to detect laser energy reflected from a laser marked/designated target and through signal processing provides guidance commands to a control system which guides the weapon to the point from which the laser energy is being reflected. LGBs are among the most accurate weapons in the AF inventory, capable of striking within a few feet of the desired mean point of impact (DMPI).[99]

RQ-1 Predator UAV. A medium-altitude, long-endurance unmanned aerial vehicle. It belongs to the JFACC and is used primarily for reconnaissance, surveillance, and target

---

[98] Joint Pub 1-02, 209.
[99] Joint Pub 1-02, 296.

acquisition. It possesses a TV camera, infrared imager, and SAR (plus other sensors at present and planned for the future).

BIBLIOGRAPHY

Andrews, William F. *Airpower against an Army: Challenge and Response in CENTAF's Duel with the Republican Guard.* Maxwell AFB, AL: Air University Press, 1998.

Atkinson, Rick. *Crusade: The Untold Story of the Persian Gulf War*. Boston: Houghton Mifflin Company, 1993.

Biddle, Stephen. *Afghanistan and the Future of Warfare: Implications for Army and Defense Policy*. Carlisle Barracks, PA: Strategic Studies Institute, U.S. Army War College, November 2002.

Clancy, Tom, with General Chuck Horner. *Every Man a Tiger.* New York: Putnam Pub Group, 1999.

Clines, Francis X. "Conflict in the Balkans: The Overview; NATO Opens Broad Barrage Against Serbs as Clinton Denounces Yugoslav President," *New York Times*, 25 March 1999.

Cohen, Eliot A. *Gulf War Air Power Survey, Summary Report*. Washington D.C.: United States Department of the Air Force, 1993.

Cohen, Eliot A., et al. *Gulf War Air Power Survey, Volume II: Operations* and *Effects and Effectiveness.* Washington D.C.: United States Department of the Air Force, 1993.

Costello, Peter A. III. "A Matter of Trust: Close Air Support Apportionment and Allocation for Operational Level Effects, Thesis, School of Advanced Aerospace Studies." Maxwell AFB, AL: 1997.

Deptula, David A. "Effects-Based Operations: Change in the Nature of Warfare." Arlington, VA: Aerospace Education Foundation, 2001. [On-line]. Available at http://www.aef.org/pub/psbook.pdf. Internet.

Douhet, Giulio, translated by Dino Ferrari. *The Command of the Air.* Washington D.C.: Office of Air Force History, 1983.

Drozdiak, William. "Yugoslav Troops Devastated by Attack," *Washington Post.* June 9, 1999.

Erlanger, Steven. "A Nation Challenged: After the Taliban; After Arm-Twisting, Afghan Factions Pick Interim Government and Leader," *New York Times.* December 6, 2001.

Ewans, Martin. *Afghanistan: A Short History of Its People and Politics.* New York: Harper Collins, 2002.

Fadok, David S. *John Boyd and John Warden: Air Power's Quest for Strategic Paralysis.* Maxwell AFB, Ala.: Air University Press, 1995.

Frostic, Fred. *Air Campaign Against the Iraqi Army in the Kuwaiti Theater of Operations.* Santa Monica, CA: RAND, 1994.

Givens, Robert P. *Turning the Vertical Flank: Airpower as a Maneuver Force in the Theater Campaign.* Maxwell AFB, AL: Air University Press, 2002.

Gordon, Michael R. and Trainor, General Bernard. *The General's War: The inside story of the conflict in the gulf.* Boston: Little, Brown and Company, 1995.

Graham, Bradley and Drozdiak, William. "Allied action fails to stop Serb brutality," *Washington Post.* 31 March 1999.

Haun, Phil M. "Airpower versus a Fielded Army: A Construct for Air Operations in the Twenty-First Century," *Aerospace Power Journal.* Winter 2001.

Hawkins, William R. "What Not to Learn from Afghanistan," *Parameters, US Army War College Quarterly, Vol. XXXII, No. 2,* Summer 2002.

Hosmer, Stephen T. *Psychological Effects of U.S. Air Operations in Four Wars, 1941-1991: Lessons for U.S. Commanders.* Santa Monica, CA: RAND, 1996.

Grant, Rebecca. "The Clash About CAS," *Air Force: Journal of the Air Force Association,* January 2003.

Ignatieff, Michael. *Virtual War: Kosovo and Beyond.* New York: Henry Holt and Company, 2000.

Judah, Tim. *Kosovo: War and Revenge.* New Haven: Yale University Press, 2000.

Lambeth, Benjamin S, *NATO's Air War for Kosovo: A Strategic and Operational Assessment.* Santa Monica, CA.: RAND, 2001.

_____ "Storm over the Desert: A New Assessment," *Joint Forces Quarterly.* Winter 2000-2001.

Laughbaum, R. Kent. *Synchronizing Airpower and Firepower in the Deep Battle.* Maxwell AFB, AL: Air University Press, 1999.

Mann, Edward C., Endersby, Gary, and Searle, Thomas. *Thinking Effects: Effects-Based Methodology for Joint Operations.* Maxwell AFB, AL: Air University Press, October 2002.

Mann, Edward C. III. *Thunder and Lightning: Desert Storm and the Airpower Debates.* Maxwell AFB, AL: Air University Press, April 1995.

Martin, Jerome V. *Victory from above: air power theory and the conduct of Operations Desert Shield and Desert Storm.* Maxwell AFB, AL: Air University Press, 1994.

McElroy, Robert H. "Afghanistan: Fire Support for Operation Anaconda," *Field Artillery.* September-October 2002.

Meilinger, Phillip S., ed. *The Paths of Heaven: The Evolution of Airpower Theory.* Maxwell AFB, AL: Air University Press, 1997.

_____. "Ten Propositions Regarding Air Power," *Airpower Journal.* Spring 1996.

Metz, Steven and Johnson, Douglas V. II. *Asymmetry and U.S. Military Strategy: Definition, Background, and Strategic Concepts.* Carlisle Barracks, PA: Strategic Studies Institute, US Army War College, January 2001. Retrieved from carlisle-www.army.mil/usassi/ssipubs/pubs2001/asymetry/asymetry.pdf.

Momyer, William W. *Air Power in Three Wars (WWII, Korea, Vietnam).* Washington, D.C.: Department of the Air Force, 1978.

Myers, Steven Lee. "Crisis in the Balkans: The Toll; Damage to Serb Military Less Than Expected," *New York Times.* June 28, 1999.

NATO Secretary General. "Dr Javier Solana, Secretary General of NATO, Press Release (1999)040, March 23, 1999," North Atlantic Treaty Organization website: http://www.nato.int/docu/pr/1999/p99-040e.htm.

O'Hanlon, Michael E. "A Flawed Masterpiece," *Foreign Affairs,* May/June 2002.

Pape, Robert A. *Bombing to win: Air power and coercion in war.* Ithaca, NY: Cornell University Press, 1996.

President. The *National Security Strategy of the United States of America.* September 2002.

President. Speech. "Remarks at the United Nations General Assembly," 12 Sep 2002. Retrived from http://www.whitehouse.gov/news/releases/2002/09/20020912-1.html.

Reynolds, Richard T. *Heart of the storm: the genesis of the air campaign against Iraq.* Maxwell, AFB, AL: Air University Press, 1994.

Robinson, Tim. "Analysis: Afghan air power revolution," *BBC News, Front Page.* 5 March 2002.

Rohde, David with Onishi, Norimitsu. "A Nation Challenged: Last Stronghold; Taliban Abandon Last Stronghold; Omar is not Found," *New York Times.* December 8, 2001.

Scales, Robert H. *Certain Victory: The U.S. Army in the Gulf War.* Dulles, VA: Brassey's Inc, 1998.

Tanner, Stephen. *Afghanistan: A Military History from Alexander the Great to the Fall of the Taliban.* New York: Da Capo Press, 2002.

Van Creveld, Martin, with Steven L. Canby and Kenneth S. Browner. *Air Power and Maneuver Warfare.* Maxwell AFB, AL: Air University Press, July 1994.

Warden, John A. III. *The Air Campaign: Planning for combat.* Washington, D.C.: National Defense University Press, 1988.

_____ "The Enemy as a System," *Airpower Journal.* Spring 1995. [Journal On-line]. Available at http://www.airpower.maxwell.af.mil/airchronicles/apj/warden.html; Internet.

Wentz, Larry K., editor. *Lessons From Kosovo: the KFOR Experience.* Washington D.C.: DOD Command and Control Research Program, July 2002.

Whitney, Craig R. "NATO Chief Admits Bombs Fail to Stem Serb Operations," *New York Times.* 28 April 1999.

Worden, Mike. *Rise of the Fighter Generals: The Problem of Air Force Leadership.* Maxwell AFB, AL: Air University Press, March 1998.

Department of Defense. *Joint Pub 3-0, Doctrine for Joint Operations.* 10 September 2001.

Department of Defense. *Joint Pub 3-09.3, JTTP for Close Air Support.* 1 December 1995.

Department of Defense. *Joint Pub 3-09, Doctrine for Joint Fire Support,* 12 May 1998.

Department of Defense. *Conduct of the Persian Gulf conflict: final report to Congress.* Washington, D.C.: GPO, 1992.

Department of Defense. *Joint Pub 3-33: Joint Force Capabilities.* 13 Oct 1999.

Department of Defense. *Report to Congress: Kosovo / Operation ALLIED FORCE After-Action Report.* 31 January 2000.

U.S. Air Force. *Air Force Doctrine Document (AFDD) 1. Air Force Basic Doctrine,* September 1997.

U.S. Air Force. *Air Force Doctrine Document (AFDD) 1-02. The Air Force Glossary.*

U.S. Air Force. *Air Force Doctrine Document (AFDD) 2-1.3. Counterland.* 27 August 1999.

Headquarters United States Air Force. Task Force Enduring Look, "Afghan Operations: The Facts" (Secret/NOFORN). Washington D.C., June 2002. All extracts unclassified.

U.S. Army. *Field Manual 3-0. Operations.* June 2001.

U.S. Army. *Field Manual 101-5-1. Operational Terms and Graphics.* 30 September 1997.

Directorate for Operational Plans and Joint Force Deployment. "An Evolving Joint Perspective: US Joint Warfare and Crisis Resolution In the 21st Century" (White paper). Washington, D.C.: 28 January 2003.